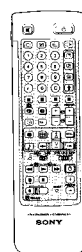


# SERVICE MANUAL

# AE-2A CHASSIS

MODEL	COMMANDER	DEST.	CHASSIS NO.	MODEL	COMMANDER	DEST.	CHASSIS NO.
<b>KV-S2921A</b>	RM-842	Italian	SCC-G12F-A	<b>KV-S2923E</b>	RM-842	Spanish	SCC-G15F-A
<b>KV-S2921B</b>	RM-842	French	SCC-G13F-A	<b>KV-S2922U</b>	RM-842	UK	SCC-G16F-A
<b>KV-S2921D</b>	RM-842	German	SCC-G14F-A				



TRINITRON® COLOR TV  
**SONY®**



ITEM MODEL	Television system	Stereo system	Channel coverage	Color system
Italian	B/G/H, D/K	GERMAN Stereo	ITALIA VHF:A-H2 (C) UHF: 21-69 PAL B/G/H VHF:E2-E12 UHF:E21-E69 CABLE TV (1):S1-S41 CABLE TV (2):S01-S05, M1-M10, U1-U10 D/K VHF:R01-R12 UHF:R21-R69	PAL, SECAM NTSC 4.43, NTSC 3.58 (VIDEO IN)
French	B/G/H, D/K L,I	GERMAN Stereo	L VHF:F02-F10 UHF: F21-F60 CABLE :B-Q B/G/H VHF: E2-E12 UHF:E21-E69 CABLE TV (1) :S1-S41 CABLE TV (2) :S01-S05, M1-M10, U1-U10 ITALIA VHF: A-H2 (C) UHF:21-69 D/K VHF:R01-R12 UHF:R21-R69 I UHF: B21-B69	PAL, SECAM NTSC 4.43, NTSC 3.58 (VIDEO IN)
AEP	B/G/H, D/K	GERMAN Stereo	PAL B/G/H VHF:E2-E12 UHF:E21-E69 CABLE TV (1) :S1-S41 CABLE TV (2) :S01-S05, M1-M10, U1-U10 ITALIA VHF: A-H2 (C) UHF:21-69 D/K VHF:R01-R12 UHF:R21-R69	PAL, SECAM NTSC 4.43, NTSC 3.58 (VIDEO IN)
Spanish	B/G/H, D/K	GERMAN / NICAM Stereo	PAL B/G/H VHF:E2-E12 UHF:E21-E69 CABLE TV (1) :S1-S41 CABLE TV (2) :S01-S05, M1-M10, U1-U10 ITALIA VHF: A-H2 (C) UHF:21-69 D/K VHF:R01-R12 UHF:R21-R69	PAL, SECAM NTSC 4.43, NTSC 3.58 (VIDEO IN)
UK	I	NICAM Stereo	UHF: B21-B69	PAL, SECAM NTSC 4.43, NTSC 3.58 (VIDEO IN)

MODEL	Italian	French	AEP	Spanish	UK
Power consumption	117Wh	137Wh	135Wh	140Wh	205Wh

**Input/Output Terminals****[REAR]**

- ②-1 21-pin Euro connector (CENELEC standard)
  - inputs for audio and video signals
  - inputs for RGB
  - outputs of TV video and audio signals
- ②-2/②-3 2 21-pin Euro connector
  - inputs for audio and video signals
  - inputs for S video
  - outputs for audio and video signals (selectable)
- ②-4/②-5 21-pin Euro connector
  - inputs for audio and video signals
  - inputs for S video
  - outputs for audio and video signals (monitor out)
- ②-2 / ②-4 S video inputs
  - 4-pin DIN
- ②- Audio inputs (L,R) phono jacks
- ②- S video output 4-pin DIN
- ②- Audio outputs - phono jacks
- ②- Audio outputs (variable) - phono jacks
- External speaker terminals :2-pin DIN

**[FRONT]**

- ②-3 Video input - phono jack
- ②- Audio inputs - phono jacks
- ②-3 S video input 4-pin DIN
- ②- Headphone jacks : stereo minijack

**SPECIFICATIONS**

- Sound output 2 x 15 (RMS)  
2 x 35 (Music)
- Power requirements 220 - 240V
- Dimensions Approx. 702x550x540 mm
- Weight Approx. 60kg
- Supplied accessories RM-842 Remote Commander (1)  
IEC designation R6 battery (1)
- Other features NICAM , MEGATEXT.

**[RM-842]**


- Remote control system infrared control
- Power requirements 1.5V dc  
1 battery IEC designation  
R6 (size AA)
- Dimensions Approx. 48x200.5x18 mm (w/h/d)
- Weight Approx. 100g including batteries

**Design and specifications are subject to change without notice.**



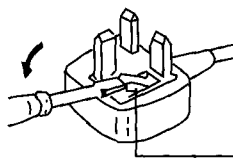
	KV-S2921A	KV-S2921B	KV-S2921D	KV-S2923E	KV-S2922U
Pai comb	ON	ON	ON	ON	ON
PIP	ON	ON	ON	ON	ON
RGB Priority	ON	OFF	ON	ON	ON
Woofer Box	OFF	OFF	OFF	OFF	OFF
Scart 1	ON	ON	ON	ON	ON
Scart 2	ON	ON	ON	ON	ON
Front in (3)	ON	ON	ON	ON	ON
Scart 4	ON	ON	ON	ON	ON
Dyn convergence	ON	ON	ON	ON	ON
Projector	OFF	OFF	OFF	OFF	OFF
AKB in 16:9 mode	ON	ON	ON	ON	ON
Norm B/G	ON	ON	ON	ON	OFF
Norm 1	OFF	ON	OFF	OFF	ON
Norm D/K	ON	ON	ON	ON	OFF
Norm AUS	OFF	OFF	OFF	OFF	OFF
Norm L	OFF	ON	OFF	OFF	OFF
Norm SAT	OFF	OFF	OFF	OFF	OFF
Norm M	OFF	OFF	OFF	OFF	OFF
Language Preset	Italiano	Francais	Deutch	Espaniol	English

### WARNING (KV-S2922U only)

The flexible mains lead is supplied connected to a **B.S. 1363** fused plug having a fuse of **5 AMP** capacity. Should the fuse need to be replaced, use a **5 AMP FUSE** approved by **ASTA** to **BS 1362**, ie one that carries the  mark.

IF THE PLUG SUPPLIED WITH THIS APPLIANCE IS NOT SUITABLE FOR YOUR SOCKET OUTLETS IN YOUR HOME. IT SHOULD BE CUT OFF AND AN APPROPRIATE PLUG FITTED. THE PLUG SEVERED FROM THE MAINS LEAD MUST BE DESTROYED AS A PLUG WITH BARED WIRES IS DANGEROUS IF ENGAGED IN A LIVE SOCKET OUTLET.

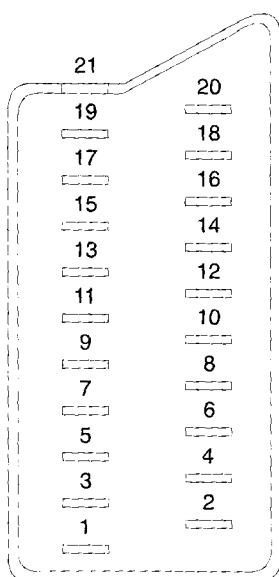
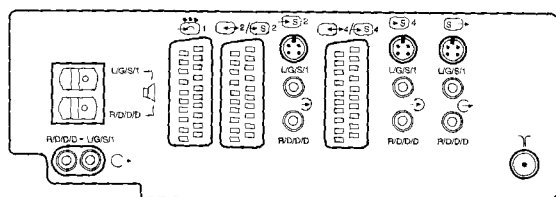
When an alternative type of plug is used it should be fitted with a **5 AMP FUSE**, otherwise the circuit should be protected by a **5 AMP FUSE** at the distribution board.



How to replace the fuse.

Open the fuse compartment with the screwdriver blade and replace the fuse.

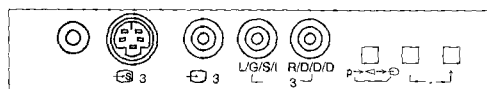
## 21 pin connector ( 1 2 / 3 4 )



Pin No.	1	2	4	Signal	Signal level
1	○	○	○	Audio output B (right)	Standard level : 0.5V rms Output impedance :Less than 1kohm*
2	○	○	○	Audio input B (right)	Standard level : 0.5V rms Output impedance :More than 10kohm*
3	○	○	○	Audio output A (left)	Standard level : 0.5V rms Output impedance :Less than 1kohm*
4	○	○	○	Ground (audio)	
5	○	○	○	Ground (blue)	
6	○	○	○	Audio input A (left)	Standard level : 0.5V rms Output impedance :More than 10kohm*
7	○	●	●	Blue input	0.7 ± 3dB, 75 ohms, positive
8	○	○	○	Function select (AV control)	High state (9.5 - 12V) : Part mode Low state (0 - 2V) : TV mode Input impedance : More than 10k ohms Input capacitance : Less than 2nF
9	○	○	○	Ground (green)	
10	○	○	○	Open	
11	○	●	●	Green	Green signal : 0.7 ± 3dB, 75 ohms, positive
12	○	○	○	Open	
13	○	○	○	Ground (red)	
14	○	○	○	Ground(blanking)	
15	○	—	—	Red input (S signal) chroma input	0.7 ± 3dB, 75 ohms, positive 0.3 ± 3dB, 75 ohms, positive
16	○	●	●	Blanking input (Y's signal)	High state (1 - 3V) Low state (0 - 0.4V) Input impedance : 75ohms
17	○	○	○	Ground(video output)	
18	○	○	○	Ground(video input)	
19	○	○	○	Video output	1V ± 3dB,75ohms,positive sync:0.3V(-3+10dB)
20	○	—	—	Video input Y (S signal)	1V ± 3dB,75ohms,positive sync:0.3V(-3+10dB)
21	○	○	○	Common ground (plug, shield)	

○ Connected ● Not Connected (open) \* at 20Hz - 20kHz

Pin No	Signal	Signal level
1	Ground	
2	Ground	
3	Y (S signal) input	1V ± 3dB 75 ohm , positive Sync. 0.3V -3/+10 dB
4	C (S signal) input	0.3V ± 3dB 75 ohm , positive Sync.



**CAUTION**

**SHORT CIRCUIT THE ANODE OF THE PICTURE TUBE AND THE ANODE CAP TO THE METAL CHASSIS, CRT SHIELD, OR CARBON PAINTED ON THE CRT, AFTER REMOVAL OF THE ANODE CAP.**

**WARNING !!**

AN ISOLATING TRANSFORMER SHOULD BE USED DURING ANY SERVICE WORK TO AVOID POSSIBLE SHOCK HAZARD, DUE TO A LIVE CHASSIS. THE CHASSIS OF THIS RECEIVER IS DIRECTLY CONNECTED TO THE AC POWER LINE.

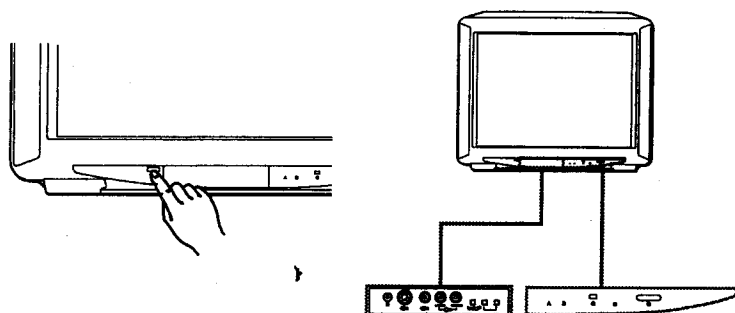
## 1-1. OVERVIEW

## SECTION 1 GENERAL

Instructions shown here are partial excerpts from the Instruction Manual. The pages of the Instruction Manual are included here in their original state.

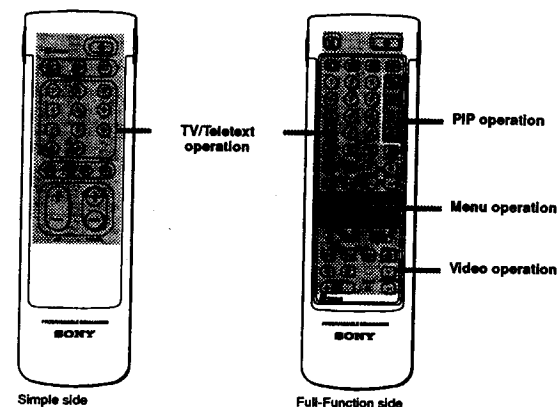
This section briefly describes the buttons and controls on the TV set and on the Remote Commander. For more information, refer to the pages given next to each description.

### TV set-front



Symbol	Name	Refer to page
h	Main power switch	41
i	Standby indicator	41
A-g -B	Stereo A/B indicators	43
J	Headphones jack	50
y 3, z 3, p 3,	Input jacks (S video/video/audio)	50
P→1 →2	Function selector (Programme/volume/input)	42
-/+	Adjustment buttons for function selector	42

### Remote commander RM-842



**Note**  
The button SAT, v and w do not operate with this TV.

### TV/Teletext operation

Symbol	Name	Refer to page
u	Muting on/off button	42
i	Standby button	41
x	TV power on/TV mode selector button	41
A	Teletext button	42
z	Input mode selector	42
h	Output mode selector	51
1,2,3,4,5,6, 7,8,9 and 0	Number buttons	41
-/-	Double-digit entering button	41
C	Direct channel entering button	38
1 +/-	Volume control button	41
PROGR +/-	Programme selectors	41
q z	Teletext page access buttons	46
n	Picture adjustment button	43
o	Sound adjustment button	43
G	On-screen display button	42
a	Teletext hold button	46
e	Time display button	42
Fasttext TOP-text buttons		46

### PIP (Picture-in-Picture) operation

Symbol	Name	Refer to page
o	PIP on/off button	45
↑	PIP source selector	45
n	Swap button	45
m	PIP position changing button	45

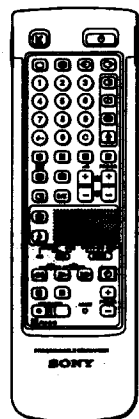
### Menu operation

Symbol	Name	Refer to page
MENU	Menu on/off button	35
o +/-	Select buttons	35
OK	OK (confirming) button	35
←	Back button	35

### Video operation

Symbol	Name	Refer to page
MEM USE	MEM/USE switch	53
MEM	MEM indicator	53
VTR 1/2/3, MDP	Video equipment selector	53
q q e e e	Video equipment operation buttons	53
PROGR +/-		
RESET	RESET button	53

## 1-2. STEP 3 – TUNING IN TO TV STATIONS

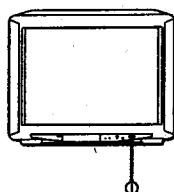


Once you have set up the TV, you can choose the language of the menu. Then you should preset the channels (up to 100 channels) by choosing either the automatic or manual method.

The automatic method is easier if you want to preset all receivable channels at once. Use the manual method if you only have a few channels and want to preset channels one by one. The manual method is also convenient for allocating programme numbers to various video input sources.

## Before you begin

- Check that the Full-Function side of the Remote Commander is visible.
- Locate Menu operation buttons on the Remote Commander. They are shaded in the illustration at the left.



## 1 Choose a language

- 1 Depress **h** on the TV.  
The TV will switch on. If the standby indicator on the TV is lit, press **x** or a number button on the Remote Commander.
- 2 Press the **MENU** button.  
The LANGUAGE menu appears. (See Fig. 1.)



- 3 Select the language you want with  $\odot$  + or  $\ominus$  - and press OK.



Fig. 1.

## 2 Display the Menu

Press the ← button.  
The main menu appears. (See Fig. 2.)

Now, choose one of the following methods  
**»Preset Channels Automatically«**  
 or  
**»Preset Channels Manually«.**

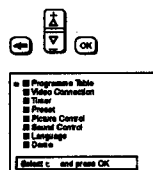


Fig. 2.

To go back to main menu  
Keep pressing ← .

To go back to the normal TV picture Press MENU.

**Note on the DEMO function**  
If you choose »Demo« on the main menu, you can see a sequential demonstration on the menu functions. Press MENU to stop the function.

With this method, you can preset all receivable channels at once.

**To stop automatic channel presetting**  
Press **←** on the Remote Commander.

## Notes

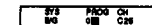
- After presetting the channels automatically, you can check which channels are stored on which programme positions. For details, see «Using the Programme Table» on page 44.
  - You can exchange the programme positions to have them appear on screen in the order you like. For details, see «Exchanging Programme Positions» on page 38.
- 4 Select the programme (number button) from which you want to start presetting. Select the first element of the double-digit number with **o +** or **s -** or the number buttons (e.g. For «04», select «0» here) and press OK. The first element of the «PROG» number will be highlighted.
  - 5 Select the second element of the double-digit number with **o +** or **s -** or the number buttons (e.g. For «04», select «4» here) (See Fig. 5.) and press OK.
  - 6 Select «C» or «S» with **o +** or **s -** and press OK. The automatic channel presettings start. When presetting is finished, the PRESET menu reappears. All available channels are now stored on successive number buttons.



Fig. 3.



Fig. 4.



**Fig. 5.**

### ③ Preset channels automatically

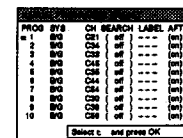
- 1 Select «Preset» with **o** or **s** – and press **OK**. The **PRESET** menu appears. (See Fig. 3.)
- 2 Select «Auto Programme» with **o** or **s** – and press **OK**. The **AUTO PROGRAMME** menu appears. (See Fig. 4.)
- 3 Press **OK**. Select if necessary the TV broadcast system (B/G for western European, D/K for eastern European countries) with **o** or **s** – and press **OK**. The first element of the «-PROG» number will be highlighted.
- 4 Select the programme (number button) from which you want to start presetting. Select the first element of the double-digit number with **o** or **s** – or the number buttons (e.g. For «04», select «0» here) and press **OK**. The second element of «-PROG» will be highlighted.
- 5 Select the second element of the double-digit number with **o** or **s** – or the number buttons (e.g. For «04», select «4» here) (See Fig. 5.) and press **OK**.
- 6 Select «C» or «S» with **o** or **s** – and press **OK**. The automatic channel presettings start. When presetting is finished, the **PRESET** menu reappears. All available channels are now stored on successive number buttons.

### ③ Preset channels manually

- 1 Select **»Preset«** with **o** or **s** – and press **OK**.  
The **PRESET** menu appears. (See Fig. 6.)
- 2 Select **»Manual Programme Preset«** with **o** or **s** – and press **OK**.  
The **MANUAL PROGRAMME PRESET** menu appears.  
(See Fig. 7.)



Fig. 6.



**Fig. 7.**

Use this method if there are only a few channels in your area to preset or if you want to preset channels one by one. You may also allocate programme numbers to various video input sources.

**If you have made a mistake**  
Press ← to go back to the previous position.  
To go back to main menu  
Keep pressing ← .  
To go back to the normal TV picture  
Press MENU.

## 1-3. ADDITIONAL PRESETTING FUNCTIONS

To tune in a channel by frequency  
After selecting F in step 6, enter three digits using the number buttons.

- 3 Using  $\circ$  or  $s-$ , select the programme position (number button) to which you want to preset a channel, and press OK.
- 4 Select if necessary, the TV broadcast system (B/G for western European countries or D/K for eastern European countries) or a video input source (EXT) with  $\circ$  or  $s-$ .
- 5 Then press OK. The CH position will be highlighted. (See Fig. 8.)
- 6 Using  $\circ$  or  $s-$ , select C (to preset a regular channel) or F (to tune in by frequency) and press OK.  
The first element of the «CH» number will be highlighted. If you have selected EXT in step 4, select the video input source with  $\circ$  or  $s-$ . (See Fig. 9.)

There are two ways to preset channels. If you know the channel number, go to step «7-Manual».

or

If you don't know the channel number, go to step «7-Search».

### 7 Manual

- a Select the first element of the «CH» number with  $\circ$  or  $s-$  or the number buttons and press OK.  
The second element of the «CH» number will be highlighted.
- b Select the second element of the number with  $\circ$  or  $s-$  or the number buttons.  
The selected number appears. (See Fig. 10.)
- c Press OK.  
The «SEARCH» position is highlighted and the selected channel is now stored. (See Fig. 11.)
- d Press OK until the cursor appears by the next programme position.
- e Repeat steps 3 to 7 to preset other channels.

### 7 Search

- a Press OK repeatedly until the colour of the SEARCH position changes.
- b Start searching for the channel with  $\circ$  (up) or  $s-$  (down).  
The CH position changes colour. (See Fig. 12.)  
The CH number starts counting up or downwards. When a channel is found, it stops. (See Fig. 13.)
- c Press OK if you want to store this channel. If not, press  $\circ$  or  $s-$  to continue channel searching.
- d Press OK until the cursor appears by the next programme position.
- e Repeat steps 3 to 7 to preset other channels.

If you have made a mistake:  
Press  $\leftarrow$  to go back to the previous position.

To go back to main menu  
Keep pressing  $\leftarrow$ .  
To go back to the normal TV picture  
Press MENU.

2 B/G EXT (CH) ..... (OK)

Fig. 8.

3 EXT AV1 ..... (OK)

Fig. 9.

2 B/G C35 (CH) ..... (OK)

Fig. 10.

2 B/G C35 (CH) ..... (OK)

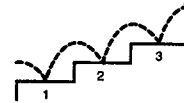
Fig. 11.

2 B/G C35 (CH) ..... (OK)

Fig. 12.

2 B/G C35 (CH) ..... (OK)

Fig. 13.



This section shows you additional presetting functions such as exchanging or skipping programme positions, captioning a station name, manual fine-tuning, and using the parental lock.

### Before you begin

- Check that the Full Function side of the Remote Commander is visible.
- Locate the Menu operation buttons.

## Exchanging Programme Positions

With this function, you can exchange the programme positions to a preferable order.

- 1 Press MENU to display the main menu.
- 2 Select «Preset» with  $\circ$  or  $s-$  and press OK.  
The PRESET menu appears.
- 3 Select «Programme Exchange» with  $\circ$  or  $s-$  and press OK.  
The PROGRAMME EXCHANGE menu appears. (See Fig. 14.)
- 4 Using  $\circ$  or  $s-$ , select the programme position you want to exchange with, another and press OK.  
The colour of the selected position changes. (See Fig. 15.)
- 5 Using  $\circ$  or  $s-$ , select the programme position to be exchanged and press OK. Now the two programme positions have been exchanged. (See Fig. 16.)
- 6 Repeat steps 4 and 5 to exchange other programme positions.

PROG CH	LABEL	PROG CH	LABEL
0 AV1 VHS	9 C35 TV		
1 C35 CA	10 C35 CA		
2 C35 ZDF	11 C35 CA		
3 C35 ZDF	12 C35 CA		
4 C35 ZDF	13 C35 CA		
5 VIDEO BMM	14 C35 CA		
6 C35 ZDF	15 C35 CA		
7 C35 ZDF	16 C35 CA		

Fig. 14.

3 C35 ZDF	11 C35 CA		
-----------	-----------	--	--

Fig. 15.

PROG CH	LABEL	PROG CH	LABEL
0 AV1 VHS	9 C35 TV		
1 C35 CA	10 C35 CA		
2 C35 ZDF	11 C35 CA		
3 C35 ZDF	12 C35 CA		
4 C35 ZDF	13 C35 CA		
5 VIDEO BMM	14 C35 CA		
6 C35 ZDF	15 C35 CA		
7 C35 ZDF	16 C35 CA		

Fig. 16.

For higher programme positions  
The display scrolls automatically.

If you have made a mistake  
Press  $\leftarrow$  to go back to the previous position.

To go back to main menu  
Keep pressing  $\leftarrow$ .

To go back to the normal TV picture  
Press MENU.

## Tuning in a Channel Temporarily

You can tune in a channel temporarily, even when it has not been preset. Use the buttons on the Full-Function side of the Remote Commander.

- 1 Press C on the Remote Commander. For cable channels, press C twice.  
The indication «C» («S» for cable channels) appears on the screen.
- 2 Enter the double-digit channel number using the number buttons (e.g. for channel 4, first press 0, then 4).  
The channel appears.  
However, the channel will not be stored.



## Skiping Programme Positions

You can skip unused programme positions when selecting programmes with the **PROGR** +/- buttons. However, the skipped programmes may still be called up when you use the number buttons.

- 1 Press **MENU** to display the main menu.
- 2 Select **»Preset«** with **o** + or **s** - and press **OK**. The **PRESET** menu appears.
- 3 Select **»Manual Programme Preset«** with **o** + or **s** - and press **OK**. The **MANUAL PROGRAMME PRESET** menu appears. (See Fig. 17.)
- 4 Using **o** + or **s** -, select the programme position which you want to skip and press **OK**. The **»SYS«** position changes colour.
- 5 Press **o** + or **s** - until **»---** appears in the **SYSTEM** position. (See Fig. 18.)
- 6 Press **OK**. (See Fig. 19.) When you select programmes using the **PROGR** +/- buttons, the programme position will be skipped.
- 7 Repeat steps 4 to 6 to skip other programme positions.



PROG	SVS	CH	SEARCH	LABEL	AFT
1	SVS	C08	(off)	---	(off)
2	SVS	C08	(off)	---	(off)
3	SVS	C08	(off)	---	(off)
4	SVS	C08	(off)	---	(off)
5	SVS	C08	(off)	---	(off)
6	SVS	C08	(off)	---	(off)
7	SVS	C08	(off)	---	(off)
8	SVS	C08	(off)	---	(off)
9	SVS	C08	(off)	---	(off)
10	SVS	C18	(off)	---	(off)

Fig. 17.

3	---
---	-----

Fig. 18.

3	---
4	---

Fig. 19.

To reactivate AFT (automatic fine tuning) Repeat from the beginning and select **»ON«** in step 5.



## Captioning a Station Name

You can **»name«** a channel or an input video source using up to five characters (letters or numbers) to be displayed on the TV screen (e.g. BBC1). Using this function, you can easily identify which channel or video source you are watching.

- 1 Press **MENU** to display the main menu.
- 2 Select **»Preset«** with **o** + or **s** - and press **OK**. The **PRESET** menu appears.
- 3 Select **»Manual Programme Preset«** with **o** + or **s** - and press **OK**. The **MANUAL PROGRAMME PRESET** menu appears. (See Fig. 20.)
- 4 Using **o** + or **s** -, select the programme position you want to caption and press **OK** repeatedly until the first element of the **LABEL** position is highlighted.
- 5 Select a letter or number with **o** + or **s** - and press **OK**. The next element will be highlighted. Select other characters in the same way. If you want to leave an element blank, select **---** and press **OK**. (See Fig. 22.)
- 6 After selecting all the characters, press **OK** repeatedly until the cursor appears by the next programme position (at the left margin). Now the caption you chose is stored. (See Fig. 21.)
- 7 Repeat steps 5 and 6 to caption names for other channels.

PROG	SVS	CH	SEARCH	LABEL	AFT
1	SVS	C08	(off)	---	(off)
2	SVS	C08	(off)	---	(off)
3	SVS	C08	(off)	---	(off)
4	SVS	C08	(off)	---	(off)
5	SVS	C08	(off)	---	(off)
6	SVS	C08	(off)	---	(off)
7	SVS	C08	(off)	---	(off)
8	SVS	C08	(off)	---	(off)
9	SVS	C08	(off)	---	(off)
10	SVS	C18	(off)	---	(off)

Fig. 20.

2	SVS	C18	(off)	---	(off)
---	-----	-----	-------	-----	-------

Fig. 21.

2	SVS	C18	(off)	SOFTY	(off)
---	-----	-----	-------	-------	-------

Fig. 22.

If you have made a mistake Press **←** to go back to the previous position.  
To go back to main menu Keep pressing **←**.  
To go back to the normal TV picture Press **MENU**.

If you try to select a programme that has been blocked The message **»LOCKED«** appears on the blank TV screen.

## Manual Fine-Tuning

Normally, the **AFT** (automatic fine-tuning) is already operating. However, if the picture is distorted, you can use the manual fine tuning function to obtain better picture reception.

- 1 Press **MENU** to display the main menu.
- 2 Select **»Preset«** with **o** + or **s** - and press **OK**. The **PRESET** menu appears.
- 3 Select **»Manual Programme Preset«** with **o** + or **s** - and press **OK**. The **MANUAL PROGRAMME PRESET** menu appears. (See Fig. 23.)
- 4 Using **o** + or **s** -, select the programme position corresponding to the channel which you want to manually fine-tune, and press **OK** repeatedly until the **AFT** position changes colour.
- 5 Fine-tune the channel with **o** + or **s** - so that you get the best TV reception. As you press the cursor buttons, the frequency changes from **-15** to **+15**. (See Fig. 24.)
- 6 After fine tuning, press **OK**. The cursor appears beside the next programme position (at the left margin). (See Fig. 25.) Now the fine-tuned level is stored.
- 7 Repeat steps 4 to 6 to fine-tune other channels.

PROG	SVS	CH	SEARCH	LABEL	AFT
1	SVS	C08	(off)	---	(off)
2	SVS	C08	(off)	---	(off)
3	SVS	C08	(off)	---	(off)
4	SVS	C08	(off)	---	(off)
5	SVS	C08	(off)	---	(off)
6	SVS	C08	(off)	---	(off)
7	SVS	C08	(off)	---	(off)
8	SVS	C08	(off)	---	(off)
9	SVS	C08	(off)	---	(off)
10	SVS	C18	(off)	---	(off)

Fig. 23.

2	SVS	C18	(off)	---	(off)
---	-----	-----	-------	-----	-------

Fig. 24.

2	SVS	C18	(off)	---	(off)
3	SVS	C18	(off)	---	(off)

Fig. 25.

## Parental Lock

You can prevent undesirable broadcasts from appearing on the screen. We suggest you use this function to prevent children from watching programmes which you consider unsuitable.

- 1 Press **MENU** to display the main menu.
- 2 Select **»Preset«** with **o** + or **s** - and press **OK**. The **PRESET** menu appears.
- 3 Select **»Parental Lock«** with **o** + or **s** - and press **OK**. The **PARENTAL LOCK** menu appears. (See Fig. 26.)
- 4 Using **o** + or **s** -, select the programme position you want to block and press **OK**. The **CH** and **LABEL** change colour indicating that this programme is now blocked. (See Fig. 27.)
- 5 Repeat step 4 to block other programme positions.

PROG	CH	LABEL	PROG	CH	LABEL
1	AVI	VHS	8	C08	---
2	C08	ZDF	9	C08	---
3	C08	MTV	10	C08	---
4	C08	ZDF	11	C08	---
5	C08	MTV	12	C08	---
6	C08	VHS	13	C08	---
7	C08	VHS	14	C08	---
8	C08	VHS	15	C08	---

Fig. 26.

PROG	CH	LABEL	PROG	CH	LABEL
1	AVI	VHS	8	C08	---
2	C08	ZDF	9	C08	---
3	C08	MTV	10	C08	---

Fig. 27.

### Cancelling blocking

- 1 On the **PARENTAL LOCK** menu, select the programme position you want to unblock with **o** + or **s** -.
- 2 Press **OK**. The **CH** and **LABEL** change colour to normal colour indicating that the blocking has been cancelled.

## 1-4. WATCHING THE TV

# Operating Instructions

## Watching the TV



If no picture appears when you depress **h** on the TV and if the standby indicator on the TV is lit, the TV is in standby mode. Press **x** or one of the number buttons to switch it on.

This section explains the basic functions you use while watching TV. Most of the operations can be done using the simple side of the Remote Commander.

### Switching the TV on and off

#### Switching on

Depress **h** on the TV.

#### Switching off temporarily

Press **i** on the Remote Commander. The TV enters standby mode and the standby indicator on the front of the TV lights up.

To switch on again

Press **x**, **PROGR +/-**, or one of the number buttons on the Remote Commander.

#### Switching off completely

Depress **h** on the TV.

### Selecting TV Programmes

Press **PROGR +/-** or press number buttons.

#### To select a double-digit number

Press **-/-**, then the numbers.

For example, if you want to choose 23, press **-/-**, 2 and 3.

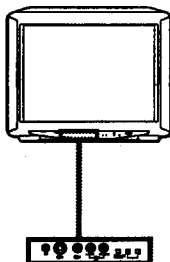
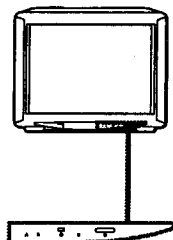
### Adjusting the Volume

Press **1 +/-**.

### Operating the TV Using the Buttons on the TV

With the buttons on the TV, you can select programmes, adjust the volume, and select video input sources.

- Press **P→1 →2** button repeatedly until the programme number, 1 (for volume), or 2 (for video input picture) appears. Then adjust with the **-/+** buttons.
- Press **-/+** buttons to switch on the TV from the standby mode.
- Press **-/+** simultaneously to reset picture and sound controls to the factory preset level (RESET function).



## 1-5. ADJUSTING AND SETTING THE TV USING THE MENU

### Adjusting the Picture and Sound

Although the picture and sound are adjusted at the factory, you can adjust them to suit your own taste. In addition, you can change the aspect ratio of the TV display for wide screen effect, or set the resolution to obtain a higher quality picture. You can also select dual sound (bilingual) programmes when available or adjust the sound for listening with the headphones (**J**).

- 1 Press **n** (for picture) or **o** (for sound) on the Remote Commander.

or

Press **MENU** and select **Picture Control** or **Sound Control**, then press **OK**. The **PICTURE CONTROL** or **SOUND CONTROL** menu appears. (See Fig. 29 or Fig. 30.)

- 2 Using **o +** or **s -**, select the item you want to adjust and press **OK**. The selected item changes colour. (See Fig. 31.)
- 3 Adjust the setting with **o +** or **s -** and press **OK**. The cursor appears beside the next item (at the left margin). (See Fig. 32.) For the effect of each control, see the table below.
- 4 Repeat steps 2 and 3 to adjust other items.

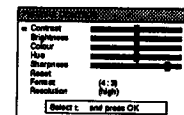


Fig. 29.

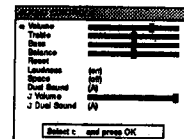


Fig. 30.



Fig. 31.



Fig. 32.

#### Effect of each control

PICTURE CONTROL	Effect
Contrast	Less —+ More
Brightness	Darker —+ Brighter
Colour	Less —+ More
Hue	Greenish —+ Reddish
Sharpness	Softer —+ Sharper
Reset	Resets picture to the factory preset levels
Format	4:3: Normal      16:9: Wide screen effect
Resolution	Normal      high: Obtain a higher quality picture
SOUND CONTROL	Effect
Volume	Less —+ More
Treble	Less —+ More
Bass	Less —+ More
Balance	More left —+ More right
Reset	Resets sound to the factory preset levels
Loudness	off: Normal      on: When listening to low volume sound
Space	off: Normal      on: Obtain acoustic sound effect
Dual Sound	A: left channel      B: right channel stereo mono
The selected mode of The A-g -B indicator on the TV lights up	
Headphones:	
J Volume	Less —+ More
J Dual Sound	A: left channel      B: right channel stereo mono

If you have made a mistake Press **←** to go back to the previous position.

To go back to the main menu Keep pressing **←**.

To go back to the normal TV picture Press **MENU**.

Note: HUE is only available for NTSC colour system and RESOLUTION does not work for SECAM colour system.

Note on LINE OUT The audio level and the dual sound mode output from the **L** jack on the rear correspond to the Headphone VOLUME and DUAL SOUND settings.

When watching video input picture you can select DUAL SOUND to change the sound.



## 1-6. PIP (PICTURE - IN - PICTURE)

### Using the Programme Table

On this table, you can see which channel is preset to which programme position. You can also select programmes using this table.

From the main menu, select »Programme Table« with **o** + or **s** - and press OK.

The PROGRAMME TABLE menu appears. (See Fig. 33.)

To scroll to higher programme numbers, press **o** -.

To select a programme using this menu

Select the programme number with **o** + or **s** - and press OK. The selected programme appears.

PROG	CH	LABEL	PROG	CH	LABEL
1	C21	11	C26	11	C26
2	C24	12	C27	12	C27
3	C25	13	C28	13	C28
4	C27	14	C29	14	C29
5	C23	15	C30	15	C30
6	C22	16	C31	16	C31
7	C22	17	C32	17	C32
8	C26	18	C33	18	C33
9	C26	19	C34	19	C34
10	C26	20	C35	20	C35

Fig. 33.

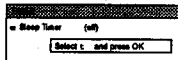
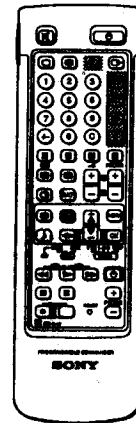


Fig. 34.

### Using the Sleep Timer

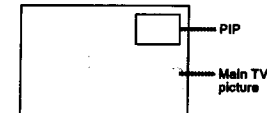
You can select a time period after which the TV automatically switches into standby mode.

- From the main menu, select »Timer« with **o** + or **s** - and press OK. The TIMER menu appears. (See Fig. 34.)
- Press OK. The time period option changes colour.
- Select the time period with **o** + or **s** -. The time period (in minutes) changes as follows:  
10 → 20 → 30 → 40 → 50 → 60 → 70 → 80 → 90  
OFF
- After selecting the time period, press OK. The cursor moves back to the left margin and the timer starts counting. One minute before the TV switches into standby mode, a message is displayed on the screen.



Note  
RGB input source cannot be displayed in PIP.

With this function you can display a »PIP screen« (small picture) within the main TV picture. In this way you can watch or monitor the video output from any connected equipment (for example from a VTR) while watching TV or vice versa. For information about connection of other equipment, refer to page 50.



#### Switching PIP on and off

Press **o**.

The PIP screen will be displayed. The PIP picture will come from the source chosen when the TV was last used.

To switch PIP off

Press **o** again.

#### Selecting a PIP source

Press **f**.

The symbol **f** will be displayed at the bottom, left-hand corner of the screen.

Press **2** repeatedly until the desired source is indicated (e.g. TV, AV1, AV2, YC2, AV3, YC3, AV4, YC4).

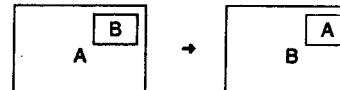
Note

If no video source has been connected, the PIP picture will be noisy.

#### Swapping screens

Press **n**.

The main screen will switch the picture with the PIP screen.

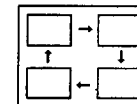


Note

If a TV programme is on the PIP screen and a video source on the main picture, and you want to change channels, first press **f** and then the programme buttons or PROGR +/-.

#### Changing the position of the PIP

Press **m** repeatedly to change the position of the PIP screen within the main screen. There are four different positions available.



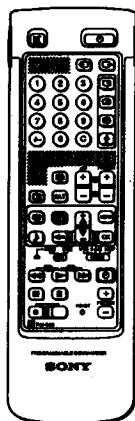
#### Displaying of PIP within Teletext

Press **o** while teletext list switched on.

The PIP screen will be displayed on the right side of the TV screen, the reduced teletext page will be displayed on the left side.

Press **o** again to make the PIP screen disappear.

## 1-7. TELETEXT



Note  
Teletext errors may occur if the broadcasting signals are weak.

With the simple side of the Remote Commander you can switch teletext on and off, operate Fasttext, and directly select page numbers.

Note  
Fasttext operation is only possible, if the TV station broadcasts Fasttext signals.

TV stations broadcast an information service called Teletext via the TV channels. Teletext service allows you to receive various information pages such as weather reports or news at any time you want. For advanced teletext operation, use the buttons on the Full-Function side of the Remote Commander.

### Direct Access Functions

#### Switching Teletext on and off

- 1 Select the TV channel which carries the teletext broadcast you want to watch.
- 2 Press **A** to switch on teletext.  
A teletext page will be displayed (usually the index page). If there is no teletext broadcast, "No text available" is displayed on the information line of the screen.

To switch teletext off  
Press **X**.

#### Selecting a teletext page

With direct page selection  
Use the number buttons to input the three digits of the chosen page number.  
If you have made a mistake, type in any three digits. Then re-enter the correct page number.

#### With page-catching

- 1 Select a teletext page with a page overview (e.g. index page).
- 2 Press **OK**. "Page catching" will be displayed on the information line. The last digit of the first displayed page number flashes.
- 3 Using **o + o s -**, select the desired page and press **OK**. The requested page will appear in a few seconds.  
Press **A** to resume normal teletext reception.

#### Accessing next or preceding page

Press **q** (PAGE+) or **r** (PAGE-).  
The next or preceding page appears.

#### Superimposing the teletext display on the TV programme

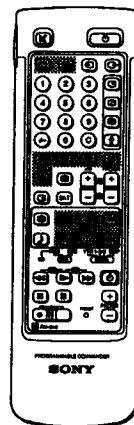
- Press **A** once in teletext mode or twice in TV mode.
- Press **A** again to resume normal teletext reception.

#### Preventing a teletext page from being updated

- Press **a** (HOLD). The HOLD symbol "a" is displayed on the information line.
- Press **A** to resume normal teletext reception.

#### Using Fasttext

With Fasttext you can access pages with one key stroke. When a Fasttext page is broadcast, a colour-coded menu will appear at the bottom of the screen. The colours of this menu correspond to the red, green, yellow and blue buttons on the Remote Commander. Press the corresponding coloured button on the Remote Commander which corresponds to the colour-coded menu. The page will be displayed after some seconds.



Note  
Some of the features may not be available depending on the Teletext service.

Note on SUBTITLES  
If the subtitles are not broadcast on page 888, please select the subtitles page using the number buttons.

Note  
If you press **OK** again the right teletext page will appear on the left side of the TV screen.

To cancel the function  
Press **←**.

### Using the Teletext Menu

This TV is provided with a menu-guided teletext system. When teletext is switched in, you can use the menu buttons to operate the teletext menu. Select the teletext menu functions in the following way:

- 1 Press **MENU**. The menu will be superimposed on the teletext display. (See Fig. 35.)
- 2 Using **o + o s -**, select the teletext function you want and press **OK**. (See Fig. 36.)

#### USER PAGES/PRESET USER PAGES

See page 49 for information about presetting and operating the user pages.

#### INDEX

The index will give you an overview of the contents of the teletext and the page numbers.

#### Dual Page Mode

After having selected the function two succeeding teletext pages will be displayed next to each other on the TV screen.

#### Accessing next or preceding page

Press **PROGR +/-**.

#### Page Catching

Press **OK**. Page Catching is now active on the left teletext page (See also page ??).

While you select a page number on the left page using **o + o s -**, the corresponding teletext page will be displayed on the right side of the TV screen.

#### TOP/BOTTOM/FULL

For convenient reading of a teletext page, you can enlarge the teletext display with the ability to scroll up and down. After having selected the function, an information line TOP/BOTTOM/FULL will be displayed. (See Fig. 37.)

Press **o +** for "Top" to enlarge the upper half. Keep pressing **s -** for "Bottom" to enlarge the lower one. Press **OK** for "Full" to resume the normal size.  
Press **A** to resume normal teletext reception.

#### TEXT CLEAR

After having selected the function, you can watch a TV programme while waiting for a requested teletext page to be displayed. (The symbol changes colour). (See Fig. 38.)

Press **A** to view the captured page.

#### SUBTITLES

Your teletext service will inform you if a TV programme is subtitled. After having selected the function the subtitles will be displayed.

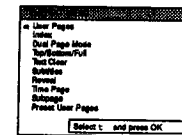


Fig. 35.

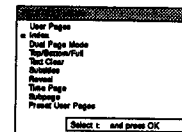


Fig. 36.

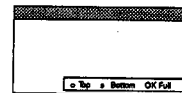


Fig. 37.

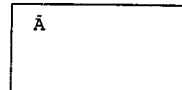


Fig. 38.

## REVEAL

Sometimes pages contain concealed information, such as answers to a quiz. The reveal option lets you disclose the information. After having selected the function, an information line "REVEAL ON/OFF" will be displayed. (See Fig. 39.)

Using  $\circ$  + or  $\circ$  - select ON to reveal the information or OFF to conceal it again.

Press  $\Delta$  to resume normal teletext reception.

## TIME PAGE

Your teletext service will inform you, if a time coded page is available. You may have a page (e.g. an alarm page) displayed at a certain time.

- 1 Press OK. An information window will be displayed at the bottom of the page. Using  $\circ$  + or  $\circ$  - select ON and press OK.
- 2 To select the desired page, enter three digits for the page number (e.g. 301) using the number buttons.
- 3 To select the desired time, enter four digits for the desired time (e.g. 1800) using the number buttons. Press MENU. The selected time is displayed at the top in the left-handed corner. At the requested time, the page will be displayed.

Use the number buttons to select another page.

## SUBPAGE

You may want to select a particular teletext page from several subpages which are rotated automatically. After having selected the function, an information line will be displayed.

To select the desired subpage, enter four digits using PROGR +/- or the number buttons. (e.g. enter 0002 for the second page of a sequence).

To cancel the request  
Select "OFF" for the  
TIME PAGE setting.

To cancel the request  
Select "Subpage" and press OK.



Fig. 39.

If two broadcasting stations use the same Teletext  
You can preset one bank to 2 different programme positions.

## User Page Bank System

You can store up to 30 pages in the "Teletext page bank system". In this way you have quick access to the pages you watch frequently.

### Storing pages

There are 5 "banks" (A to E) for 5 teletext stations. In each bank you can store 6 preferred pages (1P to 6P).

- 1 Press  $\Delta$  (if Teletext is not on already) and MENU to show the TELETEXT MENU display.
- 2 Select PRESET USER PAGES with  $\circ$  + or  $\circ$  - and press OK.
- 3 Select the desired bank with  $\circ$  + or  $\circ$  - and press OK. The cursor will go to the first position (P1) of the preferred pages.
- 4 Input the three digits of your first preferred page with the number buttons. The cursor will go to the second position.
- 5 Repeat step 4 for the other 5 page numbers you want to preset. If you do not want to preset all 6 page numbers available, press OK without inserting any number.
- 6 Select "Allocate Bank" with  $\circ$  + or  $\circ$  - and press OK.
- 7 Select the programme position for which you have preset pages with  $\circ$  + or  $\circ$  - and press OK. (See Fig. 40).
- 8 Select the desired bank with  $\circ$  + or  $\circ$  - (Banks A to E are available) and press OK.
- 9 Repeat steps 3 to 8 for the other 4 banks available.

### Displaying User Pages

- 1 Select MENU.
- 2 Select "USER PAGES" with  $\circ$  + or  $\circ$  - and press OK. A table of the stored preferred pages will be displayed. (See Fig. 41.)
- 3 Select the desired page with  $\circ$  + or  $\circ$  - and press OK. The page will be displayed after some seconds.

BANK	P1	P2	P3	P4	P5	P6
A	300	255	458	234	200	179
B	200	150	351	555	550	545
C	100	220	300	444		
D	125	231	255			
E	400	258	240	118	127	

Allocate Bank	PROG	LABEL	BANK	PROG	LABEL	BANK
00	VHS	---	04	MTV	0	
01	ARD	A	05	SAT	5	
02	RTL	C	06	SAT	C	

Select  $\Delta$  and press OK

Fig. 40.

Page	300	255	458	234	200	179
Page	300					
Page	300					
Page	254					
Page	159					

Select  $\Delta$  and press OK

Fig. 41.

## 1-8. CONNECTING AND OPERATING OPTIONAL EQUIPMENT

### Connecting Optional Equipment

You can connect optional audio-video equipment to this TV such as VTRs, video disc players, and stereo systems.

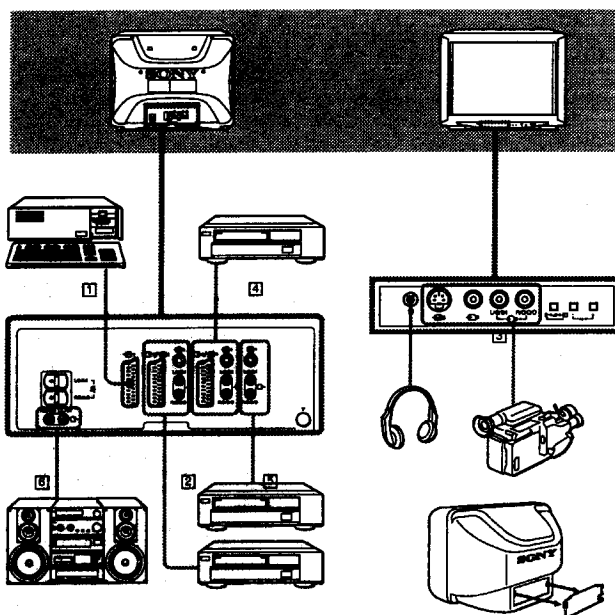
To connect a VTR using the E terminal Connect the serial output of the VTR to the serial terminal E of the TV. We recommend that you tune in the video signal to programme number "0". For details see "Preset channels manually" on page 36.

If the picture or the sound is distorted Move the VTR away from the TV.

Note: After having connected all optional equipment to the TV, attach the supplied cover onto the rear panel (See illustration at the right).

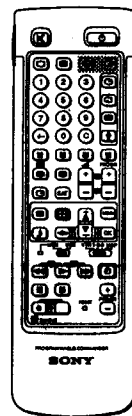
S video input (Y/C input) Video signals may be separated into Y (luminance or brightness) and C (chrominance) signals. Separating the Y and C signals prevents them from interfering with one another, and therefore improves picture quality (especially luminance). This TV is equipped with 3 S Video input jacks through which these separated signals can be input directly.

When connecting a monaural VTR Connect only the white p jack to both the TV and VTR.



Acceptable input signal	Available output signal
1 Normal audio/video and RGB signal	Video/audio from TV tuner
2 Normal audio/video and S video signal	Video/audio from selected source
3 Normal audio/video and S video signal	No outputs
4 Normal audio/video and S video signal	Video/audio displayed on TV screen (monitor out)
5 No inputs	S video/audio signal displayed on TV screen (monitor out)
6 No inputs	Audio signal (variable)

Selecting input with PROG +/- or number buttons You can preset video input sources to the programme positions so that you can select them with PROG +/- or number buttons. For details, see "Preset channels manually" on page 36.



### Selecting input and output

This section explains how to view the video input picture (of a video source connected to your TV), and how to select the output signal using direct access buttons or the menu system.

#### Selecting input

Press z repeatedly to select the input source. The symbol of the selected input source will appear.

To go back to the normal TV picture

Press x.

#### Input modes

Symbol	Input signal
z 1	Audio/video input through the e 1 connector
1	RGB input through the e 1 connector
z 2	Audio/video input through the A 2/y 2 connector
y 2	S video input through the A 2/y 2 or y 2 connector
z 3	Audio/video input through z 3 and p 3 on the front
y 3	S video input through the y 3 connectors on the front (4-pin connector)
z 4	Audio/video input through the A 4/y 4 connector
y 4	S video input through the A 4/y 4 or y 4 connector (4-pin connector)

You can also select the input mode using the P→1 →z and +/- buttons on the TV.

In this case, first select z, and then press +/- buttons to select the input.

#### Selecting the output

The A 2/y 2 connector outputs the source input from the other connectors.

Press h repeatedly to select the output.

The symbol of the selected output source appears.

#### Output modes

Symbol	A 2/y 2 connector outputs
1.h	The audio/video signal from the e 1 connector
2.h	The audio/video signal from the A 2/y 2 connector
2.a	The audio/S video signal from the A 2/y 2 connector
3.h	The audio/video signal from the z 3 and p 3 connectors
3.a	The audio/S video signal from the y 3 and p 3 connectors
4.h	The audio/video signal from the A 4/y 4 connector
4.a	The audio/S video signal from the A 4/y 4 connector
TV.h	The audio/video signal from the E aerial terminal

## 1-9. FOR YOUR INFORMATION

### Troubleshooting

Here are some simple solutions to problems which may affect the picture and sound.

Problem	Solution
No picture (screen is dark), no sound	<ul style="list-style-type: none"> <li>Plug the TV in.</li> <li>Press <b>h</b> on the TV. (If <b>i</b> indicator is on, press <b>x</b> or a programme number on the Remote Commander.)</li> <li>Check the aerial connection.</li> <li>Check if the selected video source is on.</li> <li>Turn the TV off for 3 or 4 seconds and then turn it on again using <b>h</b>.</li> </ul>
Poor or no picture (screen is dark), but good sound	<ul style="list-style-type: none"> <li>Press <b>n</b> to enter the PICTURE CONTROL menu and adjust »Brightness«, »Contrast« and »Colour«.</li> </ul>
Poor picture quality when watching a RGB source	<ul style="list-style-type: none"> <li>Press <b>z</b> repeatedly to select <b>e</b>.</li> </ul>
Good picture but no sound	<ul style="list-style-type: none"> <li>Press <b>l</b> +.</li> <li>If <b>u</b> is displayed on the screen, press <b>u</b>.</li> </ul>
No colour for colour programmes	<ul style="list-style-type: none"> <li>Press <b>n</b> to enter the PICTURE CONTROL menu, select »Reset«, then press OK.</li> </ul>
Remote Commander does not function	<ul style="list-style-type: none"> <li>Replace batteries.</li> <li>Set the MEM/USE switch to USE.</li> </ul>

If you continue to have problems, have your TV serviced by qualified personnel. Never open the casing yourself.

### Specifications

Television system	B/G/H, D/K	y	2/y	4 S video inputs
Colour system	PAL/SECAM and NTSC 3.58/NTSC 4.43 (VIDEO IN)	-		4-pin DIN
Channel coverage	See »Receivable channels and channel display« at the bottom	p		Audio inputs (L, R) - phono jacks
Picture tube	SUPER Trinitron Approx. 72 cm (29 inches) (Approx. 68 cm picture measured diagonally) 110° deflection	u		S video output - 4 pin DIN
Terminals		f		Audio outputs - phono jacks
Rear	<ul style="list-style-type: none"> <li>e 1 21-pin Euro connector (CENELEC standard)</li> <li>- inputs for audio and video signals</li> <li>- inputs for RGB</li> <li>- outputs of TV video and audio signals</li> <li>A 2/y 2 21-pin Euro connector</li> <li>- inputs for audio and video signals</li> <li>- inputs for S video</li> <li>- outputs for audio and video signals (selectable)</li> <li>A 4/y 4 21-pin Euro connector</li> <li>- inputs for audio and video signals</li> <li>- inputs for S video</li> <li>- outputs for audio and video signals (monitor out)</li> </ul>	z		3 Video input - phono jack
		p		Audio inputs - phono jacks
		y		3 S video input - 4-pin DIN
		J		Headphone jack - stereo minijack
				External speaker terminals: 2-pin DIN
				Sound output 2 x 35 W (Music)
				Power consumption 142 Wh
				Dimensions (WxHxD) Approx. 702 x 558 x 540 mm
				Weight Approx. 53 kg
				Supplied accessories Remote Commander RM-842 (1) IEC designation R6 batteries (2)
				Other features Digital comb filter (High resolution) PIP (Picture-in-picture) Programmable Commander

### Receivable Channels and Channel Displays

	Receivable channels	Indication displayed on the screen
PAL B/G	E2 .. 12 21 .. 69	C02 C03 C04 .. C12 C21 .. C69
CABLE TV (1)	S1 .. 41	S01 S02 .. S41
CABLE TV (2)	S01 .. 05 M1 .. M10 U1 .. U10	S42 .. S46 S01 .. S10 S11 .. S20
ITALIA	A B C D E F G H I H2	C13 C14 C15 C16 C17 C18 C19 C20 C11 C12
SECAM D/K	R01 .. R12 R21 .. R60	C01 .. C12 C21 .. C60

### Checking and selecting the input and output sources using the menu

You can display the menu to see which input sources are selected for the TV screen and PIP screen, and which output source is selected. You can also select them on the menu display.

- Select »Video Connection« with **o** + **o** s - and press OK. The VIDEO CONNECTION menu appears. (See Fig. 42). You can see which source is selected for the TV and PIP input, and for the output. If you want to select the input and output on this menu, go on to the next step.
- Select TV screen (input source for the TV screen), PIP (input source for the PIP screen), or Output (output source) with **o** + **o** s - and press OK. One of the source items changes colour. (See Fig. 43.)
- Select the desired source with **o** + **o** s -, (See Fig. 44.) For details about each source, see the table on page 51.
- Press OK. The selected source is confirmed, and the cursor appears. (See Fig. 45.)
- Repeat steps 2 to 4 to select the source for other inputs or outputs.

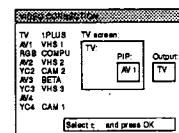


FIG 42.

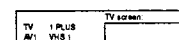


FIG 43.

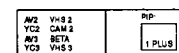


FIG 44.

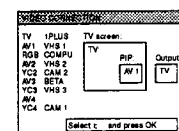
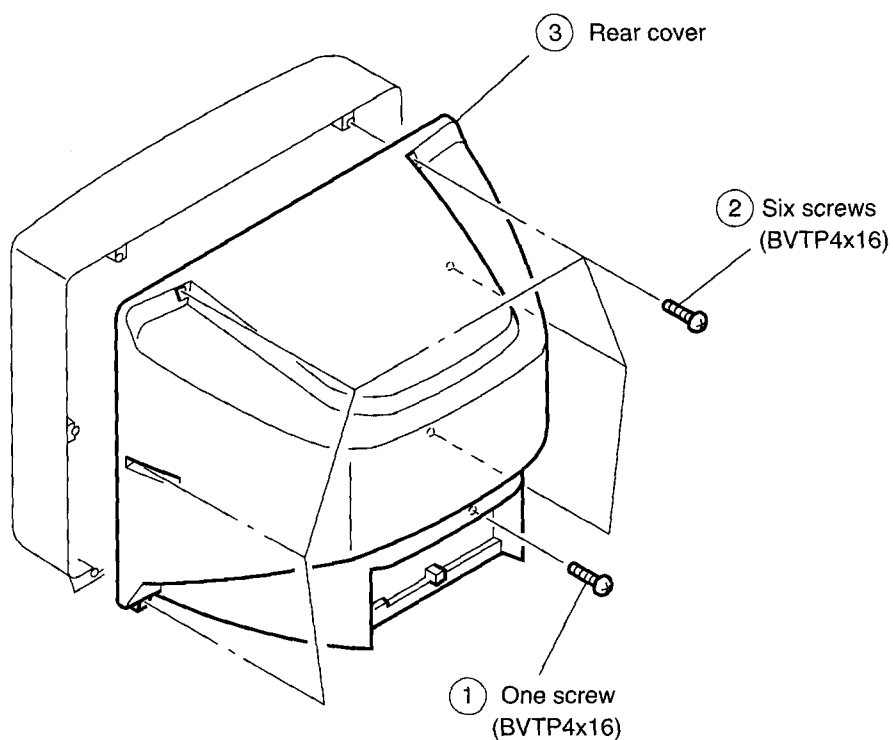


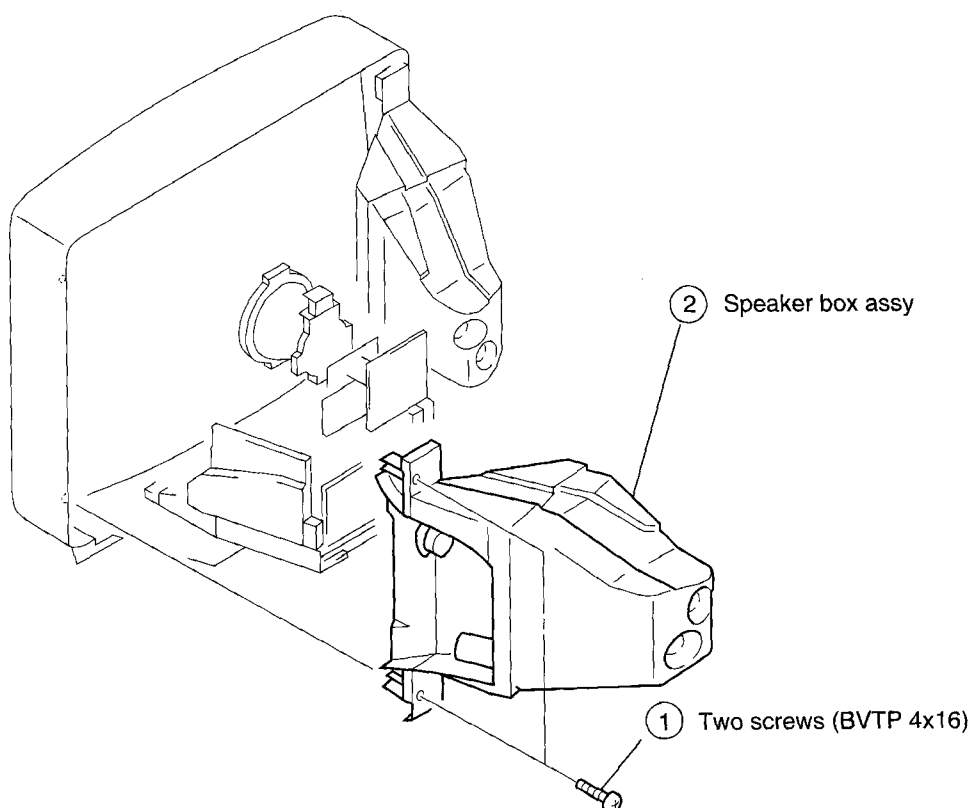
FIG 45.

## SECTION 2 DISASSEMBLY

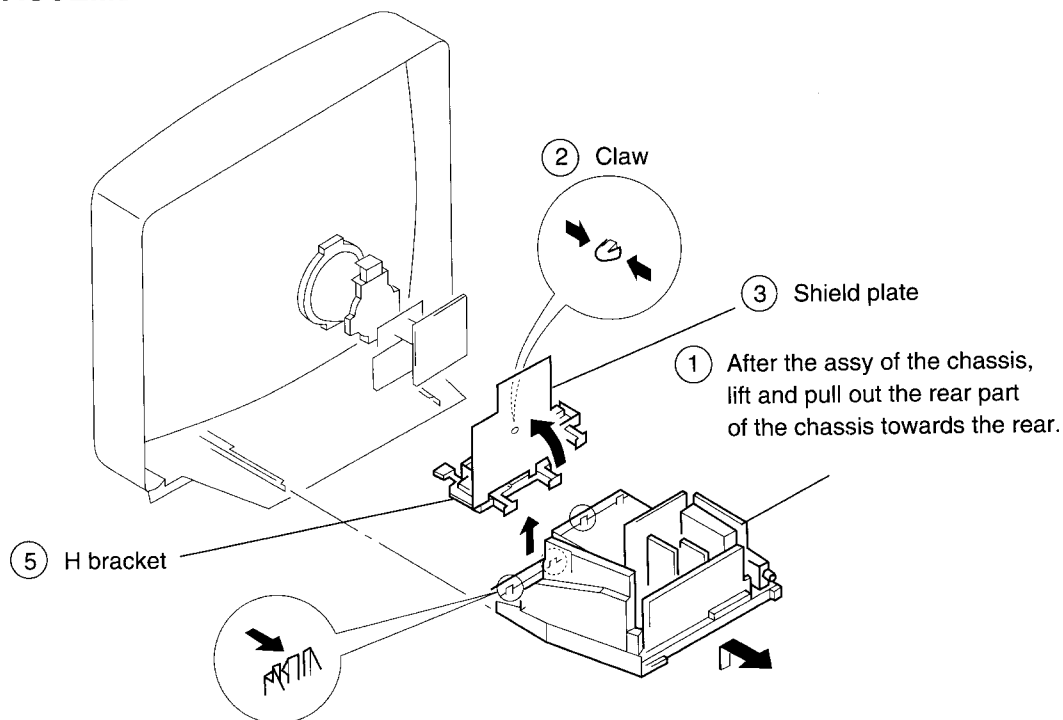
### 2-1. REAR COVER REMOVAL



### 2-2. SPEAKER REMOVAL



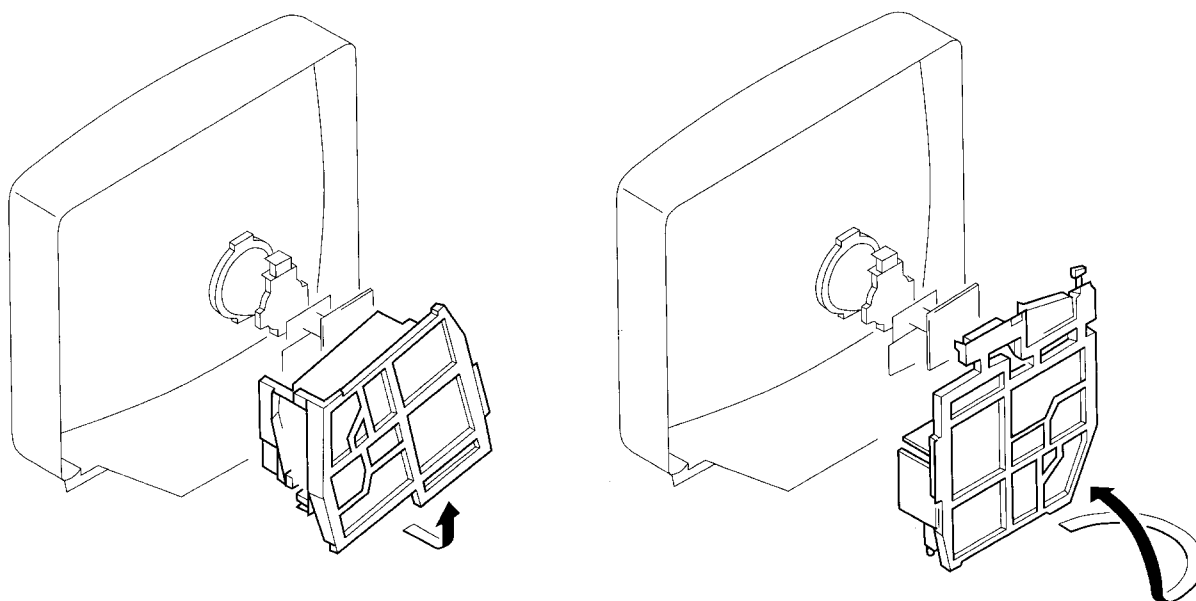
## 2-3. CHASSIS ASSEMBLY REMOVAL



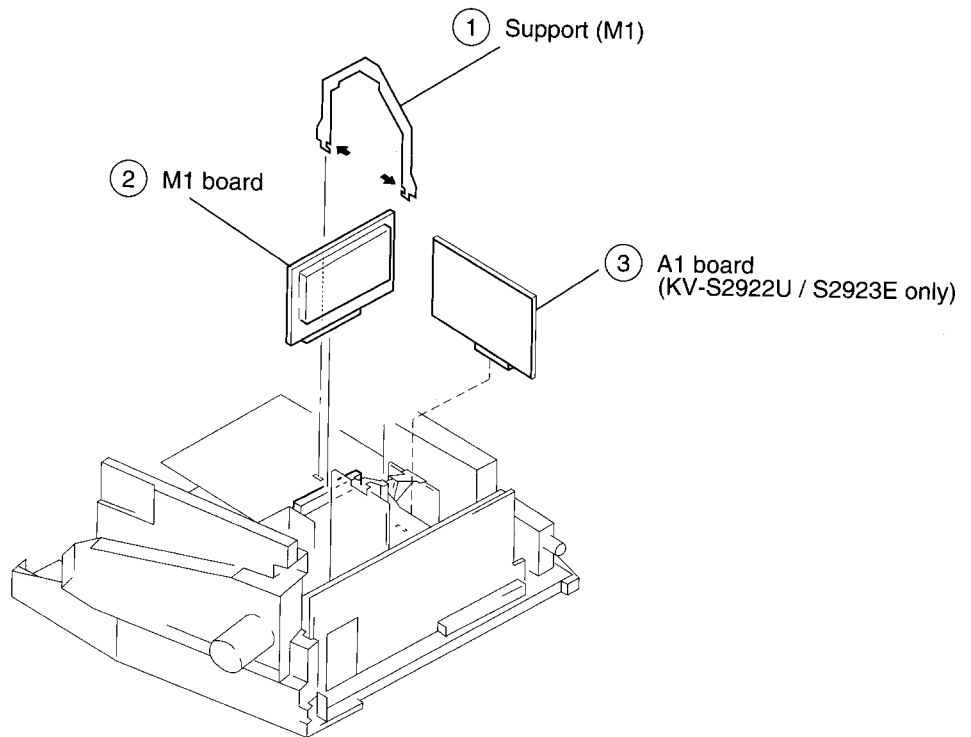
- ④ Push the three claws of the chassis in the direction of the arrow and remove the H bracket upwards.

## 2-4. SERVICE POSITION

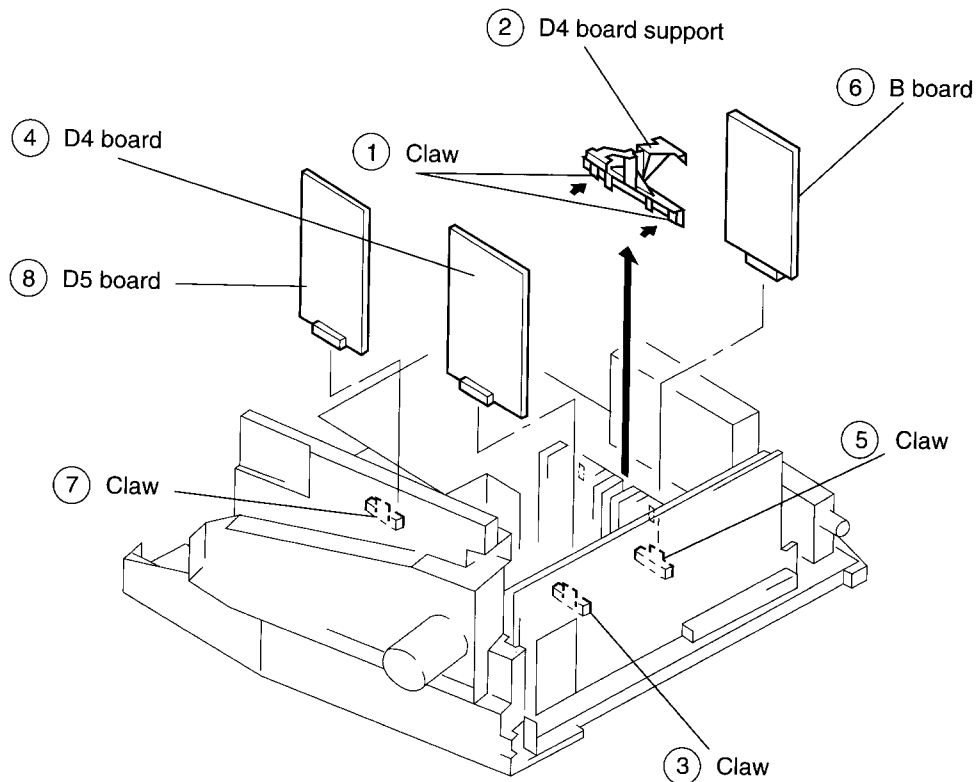
- \* Remove the H bracket from the chassis assy and then perform the following servicing.  
(Refer to 2-3. CHASSIS ASSY REMOVAL)



## 2-5. M1, A1 BOARD REMOVAL

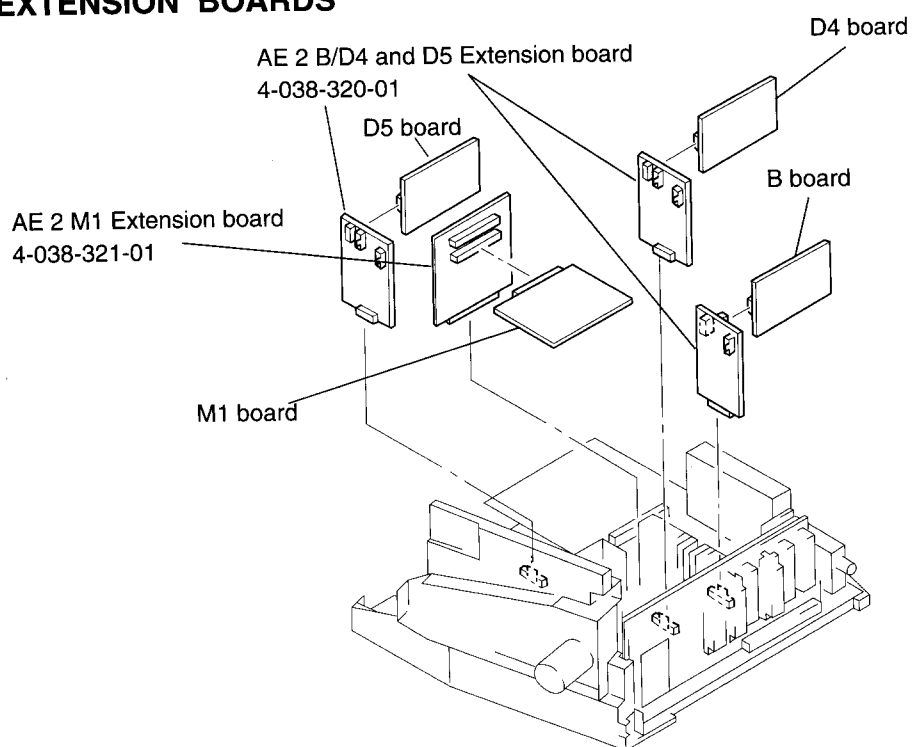


## 2-6. D 4, D 5 AND B BOARD REMOVAL

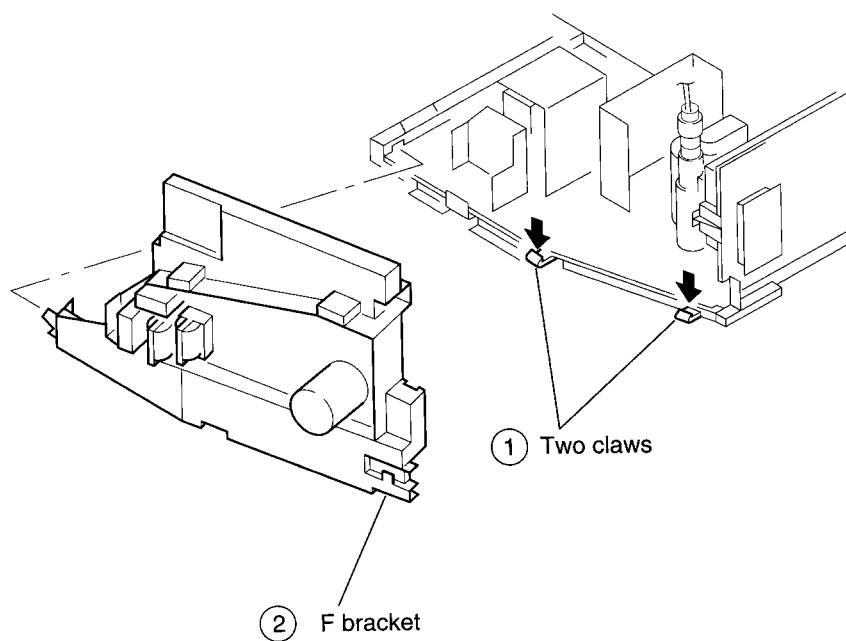




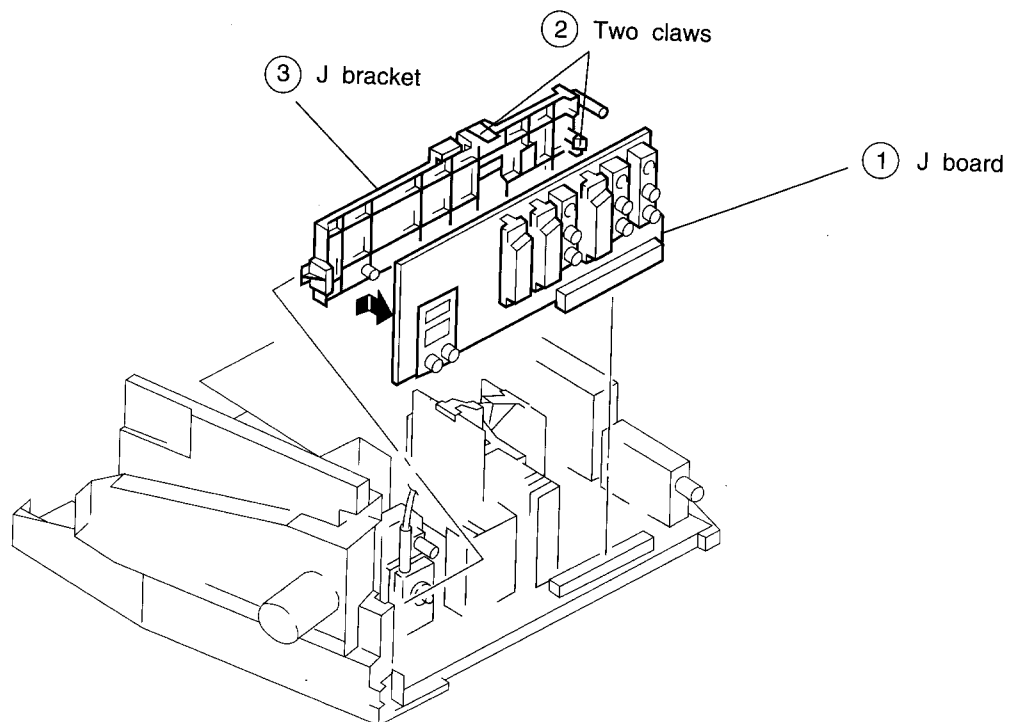
## 2-7. EXTENSION BOARDS



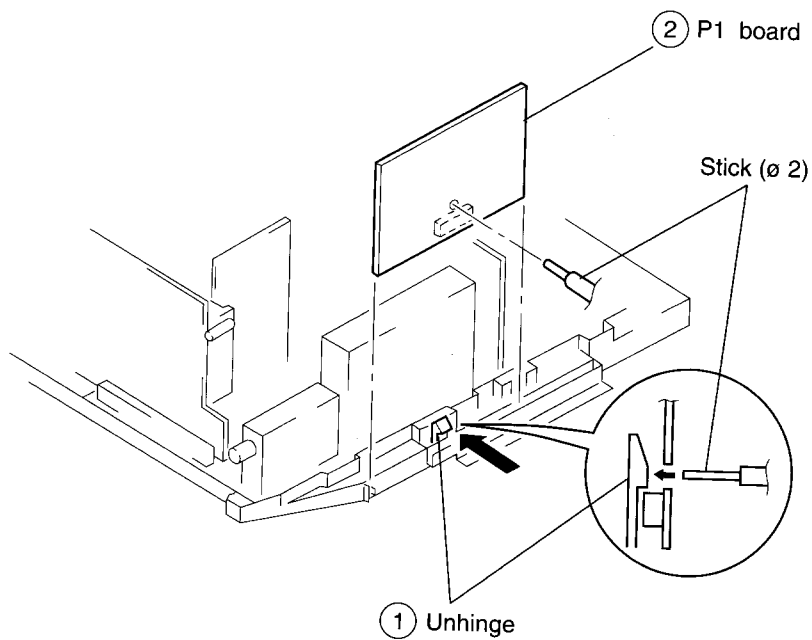
## 2-8. F BRACKET REMOVAL



## 2-9. J BOARD REMOVAL

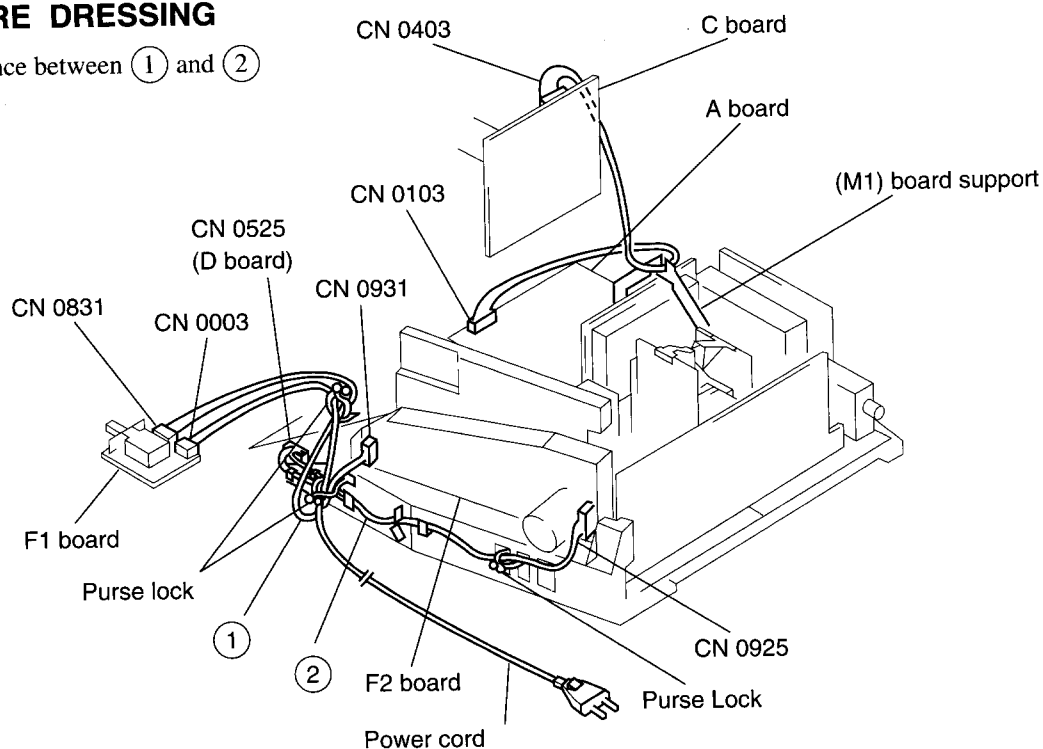


## 2-10. P1 BOARD REMOVAL

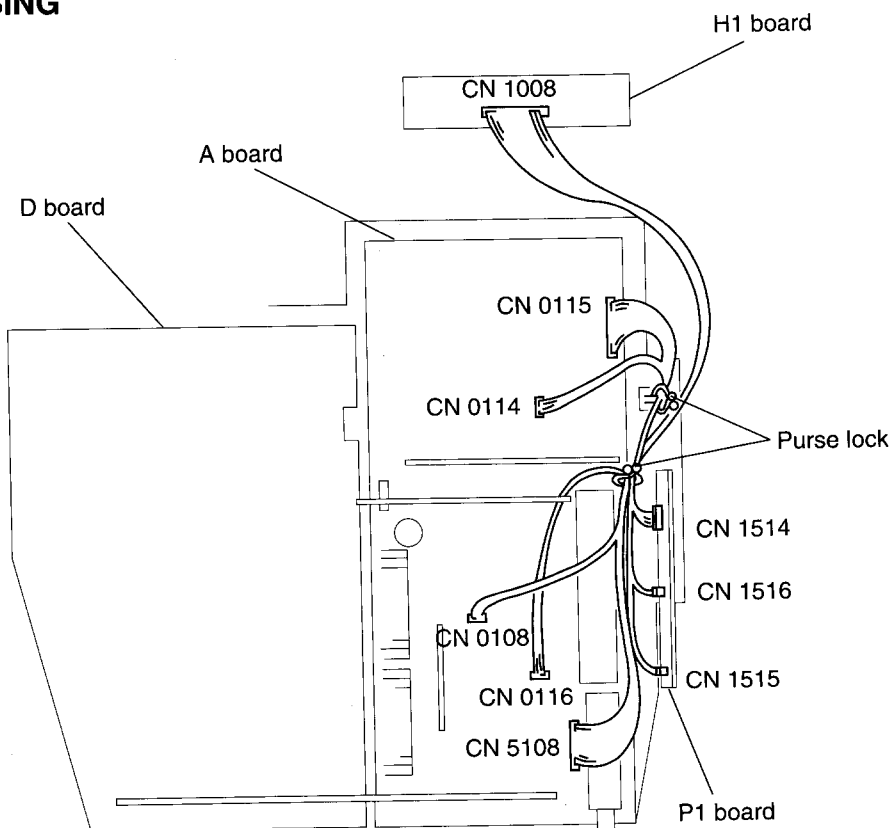


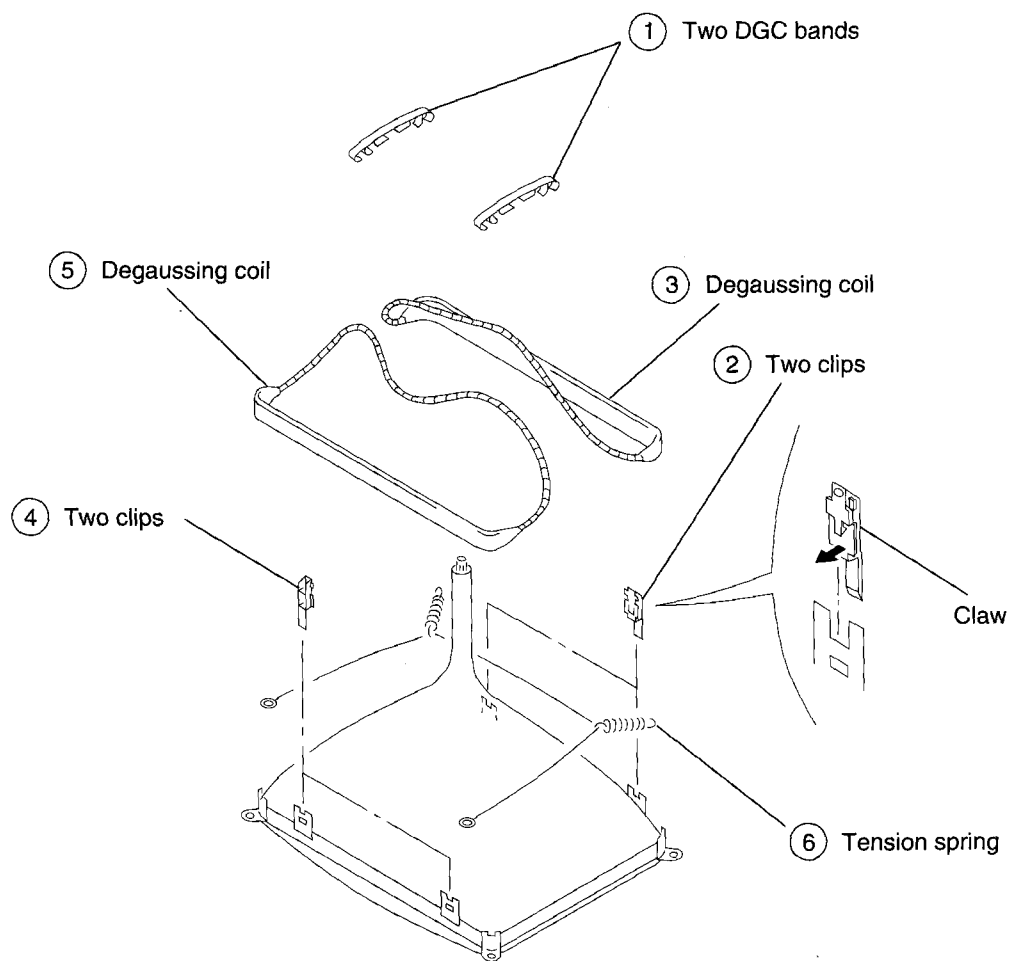
## 2-11-1. WIRE DRESSING

\* Keep distance between ① and ②

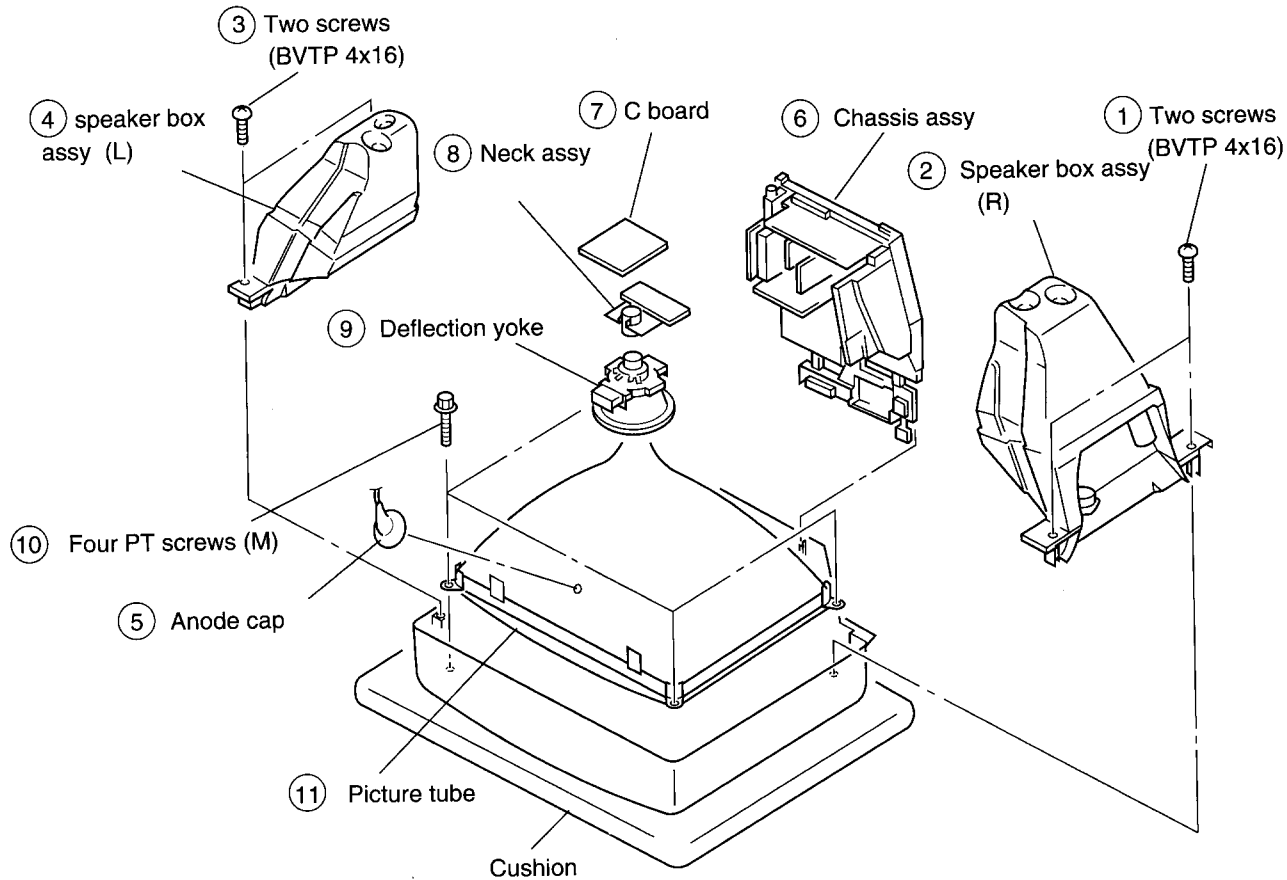


## 2-11-2. WIRE DRESSING



**2-12. DEGAUSSING COIL REMOVAL**

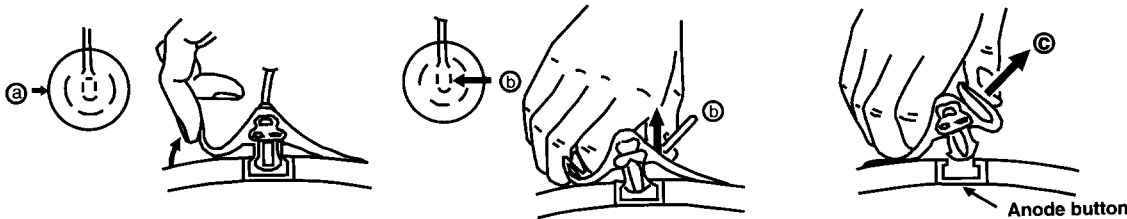
## 2-13. PICTURE TUBE REMOVAL



### • REMOVAL OF ANODE-CAP

**Note:** Short circuit the anode of the picture tube and the anode cap to the metal chassis, CRT shield or carbon paint on the CRT, after removing the anode.

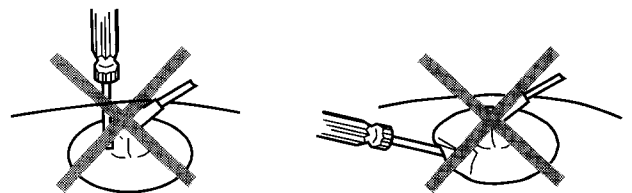
#### \* REMOVING PROCEDURES.



- ① Turn up one side of the rubber cap in the direction indicated by the arrow **a**
- ② Using a thumb pull up the rubber cap firmly in the direction indicated by the arrow **b**
- ③ When one side of the rubber cap is separated from the anode button, the anode-cap can be removed by turning up the rubber cap and pulling it up in the direction of the arrow **c**

#### • HOW TO HANDLE AN ANODE-CAP

- ① Don't damage the surface of anode-cap with sharp shaped material !
- ② Don't press the rubber hardly not to hurt inside of anode-caps !  
A metal fitting called as shatter-hook terminal is built into the rubber.
- ③ Don't turn the foot of rubber over hardly !  
The shatter-hook terminal will stick out or damage the rubber.



## SECTION 3

### SET - UP ADJUSTMENTS

- When complete readjustment is necessary or a new picture tube is installed, carry out the following adjustments.
- Unless there are specific instructions to the contrary, carry out these adjustments with the rated power supply.
- Unless there are specific instructions to the contrary, set the controls and switches to these settings :

Contrast ..... 80% (or remote control  
normal)

Brightness ..... 50%

- Carry out the following adjustments in this order :
  1. Beam landing
  2. Convergence
  3. Focus
  4. White balance

**Note:** Testing equipment required.

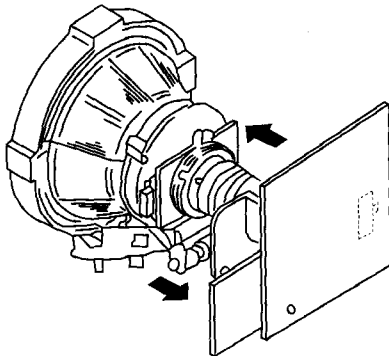
1. Color bar/pattern generator
2. Degausser
3. DC power supply
4. Digital multimeter
5. Oscilloscope

**Preparation:**

- In order to reduce the influence of geomagnetism on the set's picture tube, face it east or west.
- Switch on the set's power and degauss with the degausser.

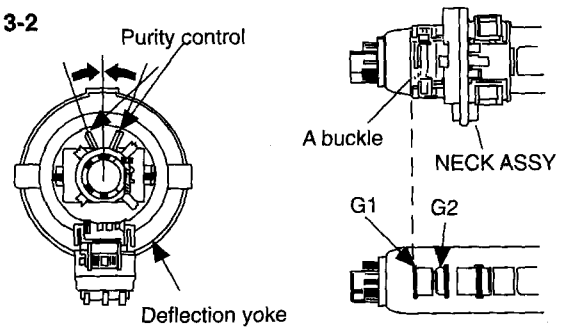
### 3-1. BEAM LANDING

1. Input the white signal with the pattern generator.  
CONTRAST } normal  
BRIGHTNESS }
2. Position neck assy as shown in Fig.3-2.
3. Set the pattern generator raster signal to red.
4. Move the deflection yoke forward and adjust with the purity control so that the red is at the center and the blue and the green take up equally sized areas on each side. (See Fig. 3-1 - 3-3)
5. Move the deflection yoke forward and adjust so that the entire screen becomes red. (See Fig. 3-1)
6. Switch the raster signal to blue, then to green and verify the condition.
7. When the position of the deflection yoke has been decided, fasten the deflection yoke with the screws.
8. If the beam does not land correctly in all the corners, use a magnet to adjust it. (See Fig. 3-4)

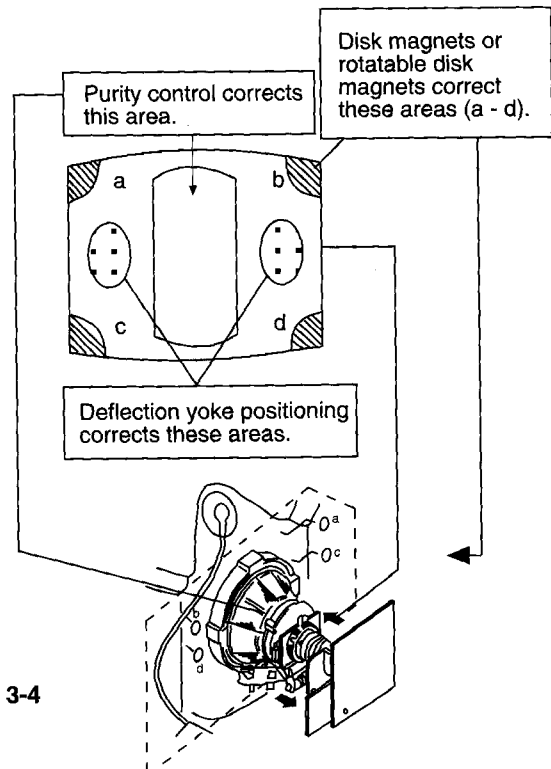
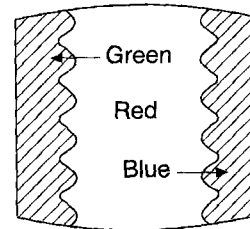


**Fig. 3-1**

**Fig. 3-2**



**Fig. 3-3**



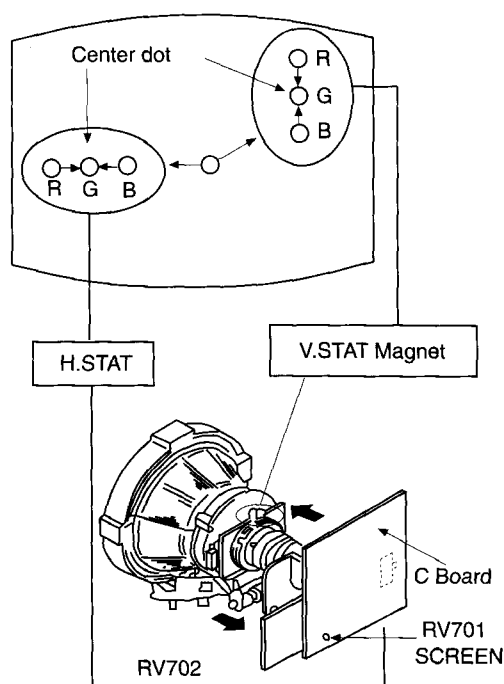
**Fig. 3-4**

### 3-2. CONVERGENCE

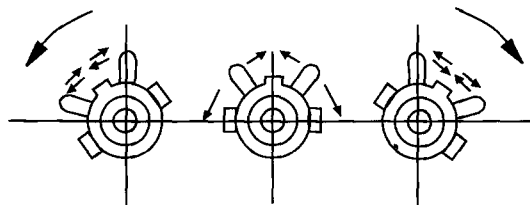
#### Preparation:

- Before starting this adjustment, adjust the focus, horizontal size, and vertical size.
- Minimize the brightness setting.
- Provide a dot pattern.

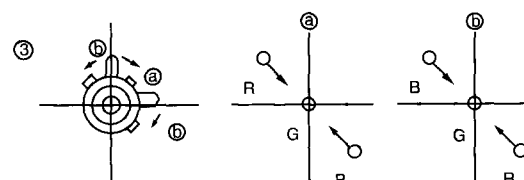
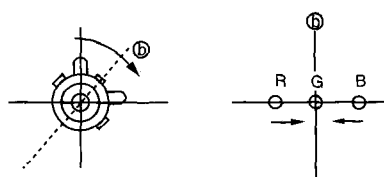
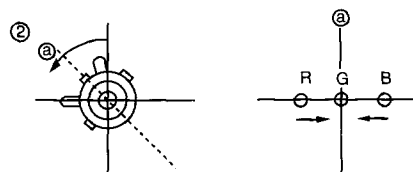
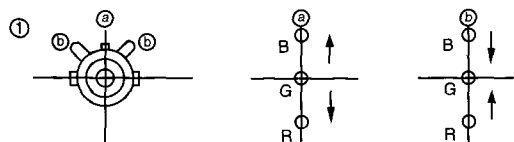
#### (1) Horizontal and vertical static convergence



- Tilt the V.STAT magnet and adjust the static convergence by opening or closing the V.STAT magnet.

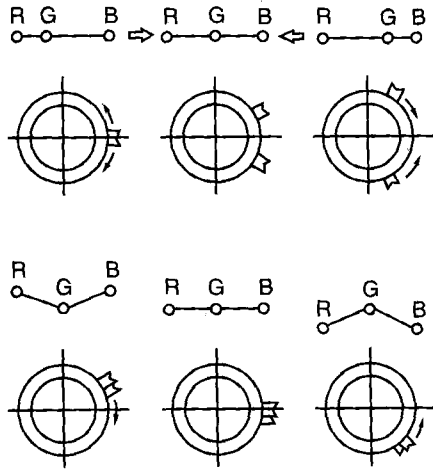


4. If the V.STAT magnet is moved in the direction of the (a) and (b) arrows, the red, green, and blue points move as shown below.

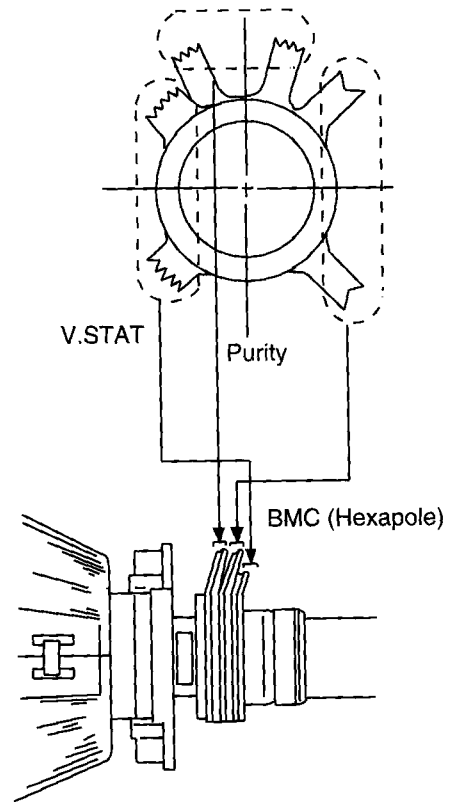


1. (Moving horizontally), adjust the H.STAT control so that the red, green, and blue points are on top of each other at the center of the screen.
2. (Moving vertically), adjust the V.STAT magnet so that the red, green, and blue points are on top of each other at the center of the screen.
3. If the H.STAT variable resistor cannot bring the red, green, and blue points together at the center of the screen, adjust the horizontal convergence with the H.STAT variable resistor and the V.STAT magnet in the manner given below.  
(In this case, the H.STAT variable resistor and the V.STAT magnet influence each other)

- Operation of BMC (Hexapole) Magnet



- The respective dot position resulting from moving each magnet interact, so be sure to perform adjustment while tracking.  
Use the H.STAT VR to adjust the red, green, and blue dots so they coincide at the center of the screen (by moving the dots in the horizontal direction).

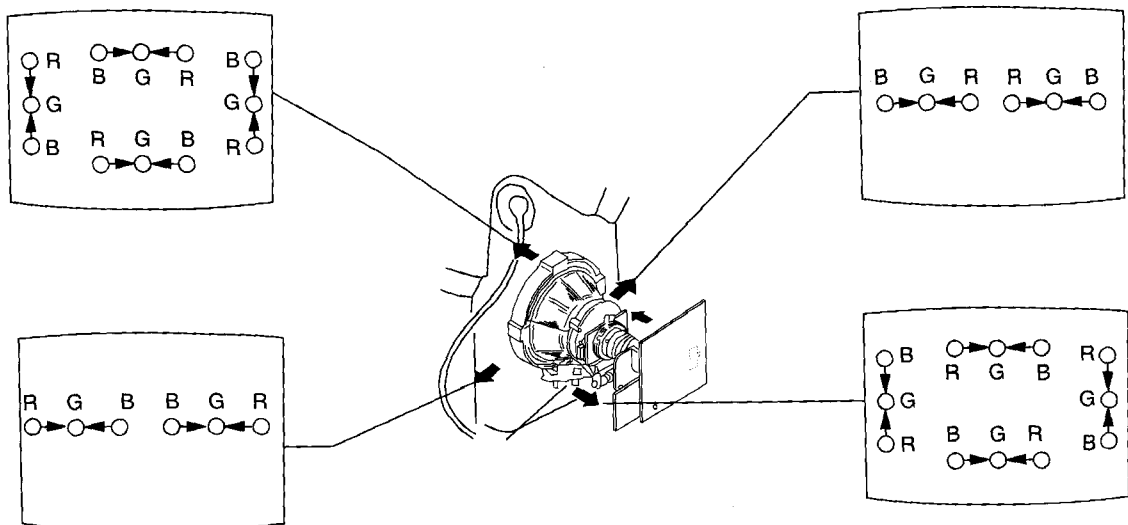


## (2) Dynamic convergence adjustment.

### Preparation:

- Before starting this adjustment, adjust the horizontal static convergence and the vertical static convergence.
- Slightly loosen the deflection yoke screws.

- Remove the deflection yoke spacer.
- Move the deflection yoke as shown in the figure below and optimize the convergence.
- Tighten the deflection yoke screws.
- Re-install the deflection yoke spacer.





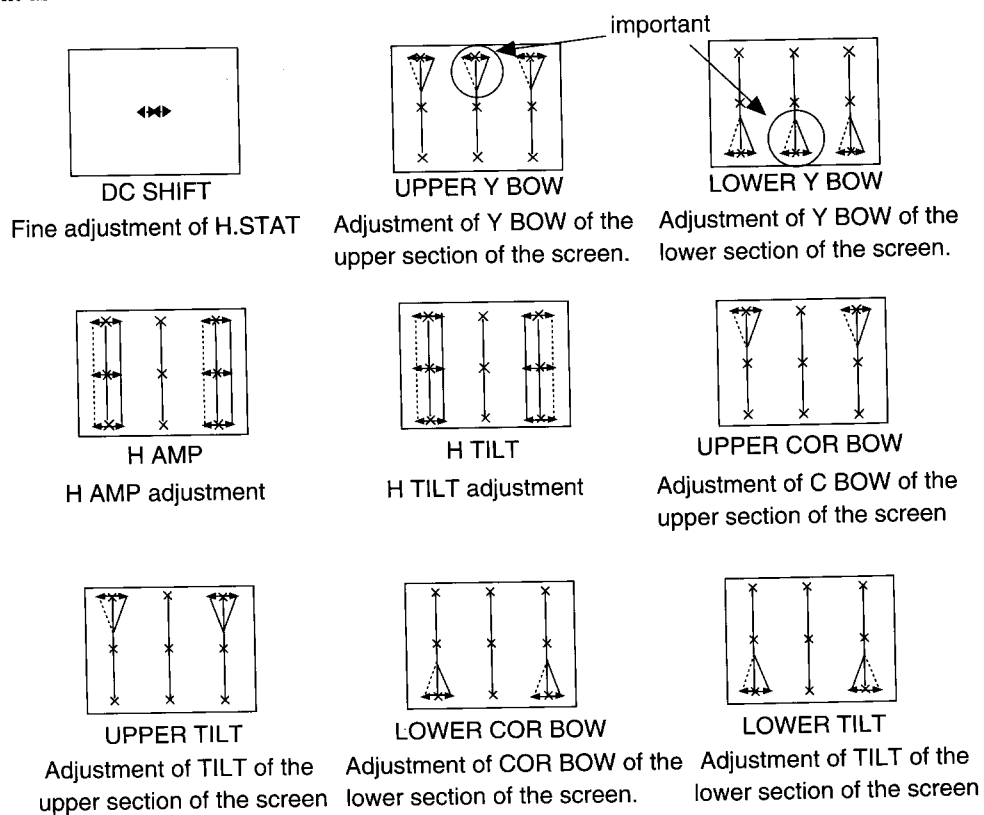
## (2) Dynamic convergence adjustment

1. Adjust the horizontal convergence located at the center position of the screen with the H.STAT VR.
2. Enter into service mode. (Refer to section 2 "Electrical Adjustment" on how to enter service mode).
3. Select CXA 1526 on menu.
4. Select each item in turn, and adjust in order that each item attains optimal convergence.
5. Press **OK** button to write the data.

### CXA 1526

Item No.	Adjustment item	Data Amount
01	DC SHIFT	32
02	UPPER Y BOW	32
03	LOWER Y BOW	32
04	H AMP	32
05	H TILT	32
06	UPPER COR BOW	32
07	UPPER TILT	32
08	LOWER COR BOW	32
09	LOWER TILT	32

R.G.B. dot movement as seen on the screen of the set.

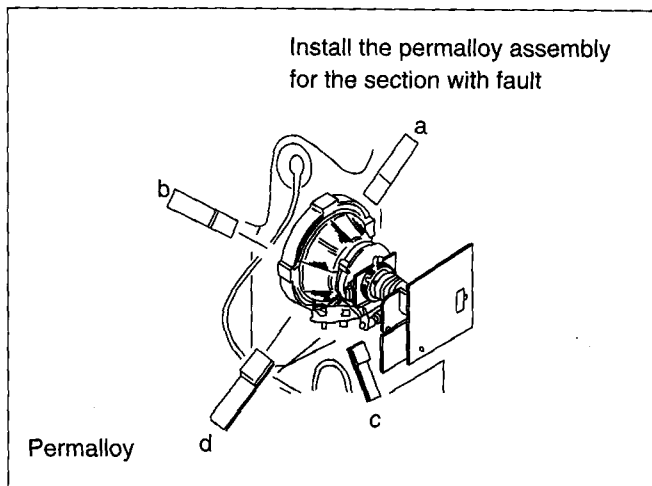
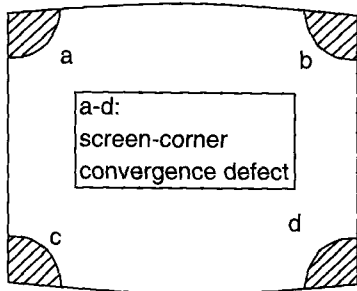


At this time, H.TILT, H.AMP, UPPER TILT, UPPER COR BOW, LOWER TILT, and LOWER COR BOW look the same, but the movement of the right

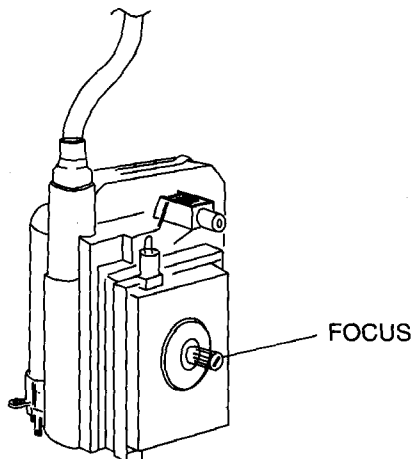
and left dots are reverse in all the TILT system. (Pay attention to the dotted lines).

**(4) Screen corner convergence.**

If you are unable to adjust the corner convergence properly, correct them with the use of permalloy assemblies.

**3-3. Focus**

Adjust the focus to optimize the screen.

**3-4. WHITE BALANCE****Screen G2 Setting**

1. Input the dot signal from the pattern generator.
2. Set the picture brightness control to its lowest level.
3. Apply 180V DC to the R,G, and B cathodes with an external power supply.
4. While watching the picture, adjust G2 control RV701 (Screen) to the point just before the return lines disappear.

**White balance adjustment**

1. Receive an all-white signal.
2. Enter into service mode. (Refer to the section 4 "Electrical Adjustment" on how to enter service mode.)
3. Select CXA 1587S on menu.

09	SUB BRIGHT	ADJ.
10	SUB HUE	8
11	VM LEVEL	2
12	NR LEVEL	0
13	ABL MODE	0
14	G-DRIVE	ADJ.
15	B-DRIVE	ADJ.
16	G-AUTO CUT OFF	ADJ.
17	B-AUTO CUT OFF	ADJ.
18	R-MANUAL CUT OFF	ADJ.
19	G-MANUAL CUT OFF	ADJ.
20	B-MANUAL CUT OFF	ADJ.

4. Set picture to MAX.
5. Adjust G-DRIVE, B-DRIVE with  $\uparrow$ ,  $\downarrow$  buttons so that the white balance becomes optimum.
6. Press **OK** button to write the data for each item.
7. Set picture to MIN.
8. Adjust G-AUTO CUT OFF, B-AUTO CUT OFF, R-MANUAL CUT OFF, G-MANUAL CUT OFF and B-MANUAL CUT OFF with  $\uparrow$ ,  $\downarrow$  buttons so that the white balance becomes optimum.
9. Press **OK** button to write the data for each item.

## SECTION 4

### CIRCUIT ADJUSTMENTS

#### 4-1. ELECTRICAL ADJUSTMENTS

Service adjustment to this model can be performed with the supplied remote commander RM-842

##### HOW TO ENTER INTO SERVICE MODE

1. Turn on the main power switch of the set while pressing any two buttons on the front panel.

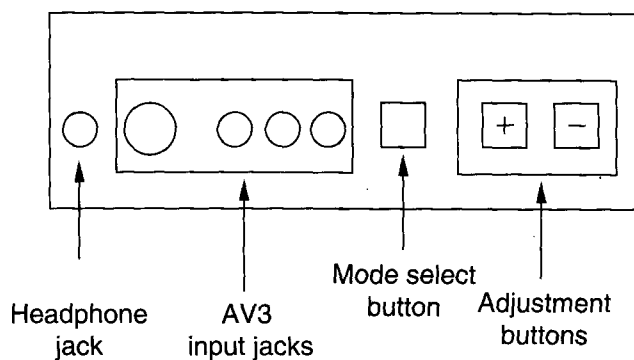


Fig. 4-1

2. "TT" will appear at the upper right corner of the screen.

Command operation in service mode.

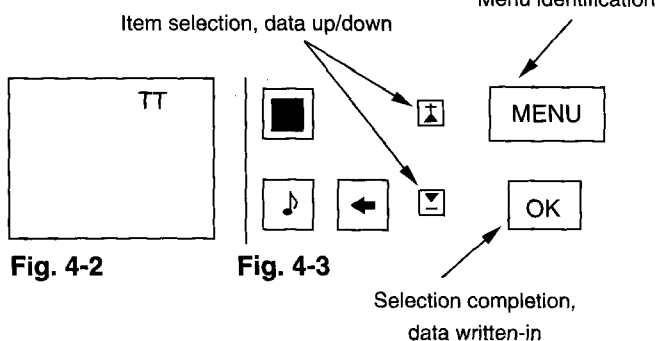


Fig. 4-2

Fig. 4-3

3. Press the MENU button on the remote commander to obtain the menu on the screen.

MAIN MENU	
	Programme Table
	Video Connection
	Picture Control
	Sound Control
	Timer
	Preset
	Language
>	DEMO
Select < > and press OK	

Fig. 4-4

4. Press the ▲ and ▼ buttons on the remote commander and move > to DEMO.
5. Press [OK] button to proceed to the next menu.
6. The menu of fig. 4-5 will appear on the screen. Select the DEVICE corresponding to the adjustment item from the table on the next page.

DEVICES	
	Initialize
>	CXA1587S
	CXD2018
	TDA9145
	CXA1526
	TDA6612
	CX7948A
	PIP SERVICE
	MEGATEXT
Select < > and press OK	

Fig. 4-5

7. If adjustment item is CXA1587S, press the ▼ button and move > to CXA1587S.

##### CXA1587S

Item No	Adjustment item	Data Amount
01	PICTURE	53
02	COLOR	31
03	BRIGHT	31
04	HUE	31
05	SHARPNESS	12
06	RGB PICTURE	7
07	SUB CONTRAST	ADJ.
08	SUB COLOR	ADJ.
> 09	SUB BRIGHT	ADJ.
10	SUB HUE	8
11	VM LEVEL	2
12	NR LEVEL	0
13	ABL MODE	0
14	G-DRIVE	ADJ.
15	B-DRIVE	ADJ.

8. Press [OK] button to get the next selection menu.
9. Press ▼ button and move > to the adjustment item and press [OK] button.
10. Press ▲ and ▼ buttons to change the data in order to comply with each standard.
11. Press [OK] button to write data.
12. Turn off the power to quit service mode when adjustments are completed.

Item No	Adjustment item.	Data Amount
01	PICTURE	53
02	COLOR	31
03	BRIGHT	31
04	HUE	31
05	SHARPNESS	12
06	RGB PICTURE	7
07	SUB CONTRAST	ADJ.
08	SUB COLOR	ADJ.
09	SUB BRIGHT	ADJ.
10	SUB HUE	8
11	VM LEVEL	2
12	NR LEVEL	0
13	ABL MODE	0
14	G-DRIVE	ADJ.
15	B-DRIVE	ADJ.
16	G-AUTO CUT OFF	ADJ.
17	B-AUTO CUT OFF	ADJ.
18	R-MANUAL CUT OFF	ADJ.
19	G-MANUAL CUT OFF	ADJ.
20	B-MANUAL CUT OFF	ADJ.
21	GAMMA LEVEL	8
22	DC TRANSFER RATIO	3
23	DYNAMIC PICTURE	2
24	Y FILTER ADJ	ADJ.
25	Y DELAY TIME	15
26	Y DELAY SWITCH 1	0
27	Y DELAY SWITCH 2	1
28	SHARPNESS LIMIT	ON
29	TRAP	OFF
30	H SHIFT	36
31	DAC TEST	ON
32	PRE/OVER SHOOT	12
33	SUB FOCUS	2
34	SUB SHARPNESS	3
35	R MUTE	OFF
36	G MUTE	OFF
37	B MUTE	OFF
38	AGING 1 WHT	OFF
39	AGING 2 BLK	ON
40	AKB OFF	ON
41	INHIBIT RGB	ON
42	FORCED RGB	OFF
43	V/2 V	OFF
44	AXIS	PAL
45	HUE OFF	OFF
46	V EXTENSION	OFF
47	AFC 1	1
48	AFC 2	0
49	AFC OFF	OFF
50	REF. POSITION	0

Item No	Adjustment item.	Data Amount
01	DC SHIFT	32
02	UPPER Y BOW	32
03	LOWER Y BOW	32
04	H. AMP	32
05	H TILT	32
06	UPPER COR BOW	32
07	UPPER TILT	32
08	LOWER COR BOW	32
09	LOWER TILT	32

Item No	Adjustment item.	Data Amount
01	V SIZE	ADJ.
02	V SHIFT	ADJ.
03	S CORRECTION	ADJ.
04	V LINEARITY	ADJ.
05	H SIZE	ADJ.
06	PIN AMP	ADJ.
07	TILT	ADJ.
08	UPPER CORNER	ADJ.
09	LOWER CORNER	ADJ.
10	V BOW	ADJ.
11	ANGLE	ADJ.
12	HV COMP. V	12
13	HV COMP. H	8
14	FRAME SHIFT	OFF
15	FREE RUN 60 Hz	OFF
16	SYSTEM 60 Hz	OFF
17	ASPECT WIDE	OFF
18	DOUBLE SCAN	OFF
19	INTERLACE	ON
20	H SHIFT	26
21	N/S CORRECTION	ADJ.

Typical On Screen Display based values when receiving PAL Phillips pattern.

TDA6612	ADJ
Stereo-Separation	(31 )

Should be adjusted twice, once for 4 : 3 and once for 16 : 9 mode.

**Y FILTER ADJUSTMENT**

1. Input a PAL RED pattern.
2. Connect an oscilloscope to pin ① of CN0403 (R IN) on C board.
3. Enter into service mode and press 3,8.
4. Adjust data by  $\Delta$  or  $\nabla$  to minimize the chroma element at CN0403 pin ①.

**SUB BRIGHTNESS ADJUSTMENT**

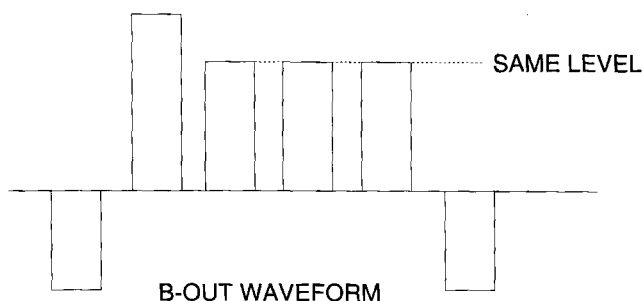
1. Input a Phillips pattern.
2. Enter into service mode and press 23.
3. Adjust data so that 0-IRE of grey scale and CUT-OFF 20-IRE are only slightly visible on screen.

**SUB CONTRAST ADJUSTMENT**

1. Input a video that contains a small 100% area on a Black Background.
2. Enter into service mode and press 01 to have PIC max followed by 21.
3. Connect oscilloscope to pin ① of CN0403 (R IN) and adjust data to obtain 2.5Vp-p.

**SUB COLOR ADJUSTMENT**

1. Input a PAL color bar signal.
2. Connect an oscilloscope to pin ③ of CN0403 (B IN) on the C board.
3. Enter into service mode and press 22 of CXA1587S, 8 SUB COLOR.
4. Adjust data so that the right sides of the waveform are set to the same level.

**STEREO-SEPARATION ADJUSTMENT**

1. Input a 1kHz stereo signal to the L-ch and a 400Hz stereo signal to the R-ch.
2. Enter into service mode and press 19.
3. Adjust data so that sound is not detected in the Right-ch and the Left-ch.

**DRIVE AND CUT-OFF**

See direct test mode list attached and refer to sub brightness or such for adjustment method.

# DEFLECTION SYSTEM ADJUSTMENT

1. Enter into service mode and select CXD2018Q.
2. Select and adjust each item in order to obtain the optimum image.

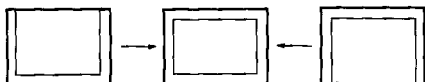
## CXD2018

Item No	Adjustment item.	Data Amount
01	V SIZE	ADJ.
02	V SHIFT	ADJ.
03	S CORRECTION	ADJ.
04	V LINEARITY	ADJ.
05	H SIZE	ADJ.
06	PIN AMP	ADJ.
07	TILT	ADJ.
08	UPPER CORNER	ADJ.
09	LOWER CORNER	ADJ.
10	V BOW	ADJ.
11	ANGLE	ADJ.
12	HV COMP. V	12
13	HV COMP. H	8
14	FRAME SHIFT	OFF
15	FREE RUN 60 Hz	OFF
16	SYSTEM 60 Hz	OFF
17	ASPECT WIDE	OFF
18	DOUBLE SCAN	OFF
19	NON INTERLACE	ON
20	H SHIFT	26
21	N/S CORRECTION	ADJ.

### V SIZE



### V SHIFT



### S CORRECTION



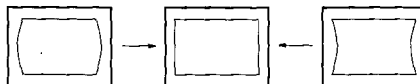
### V LINEARITY



### H SIZE



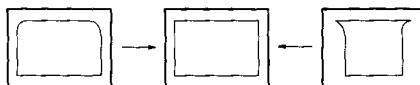
### PIN AMP



### TILT



### UPPER CORNER PIN



### LOWER CORNER PIN



### V BOW



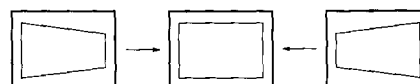
### ANGLE



### H SHIFT



### N/S CORRECTION



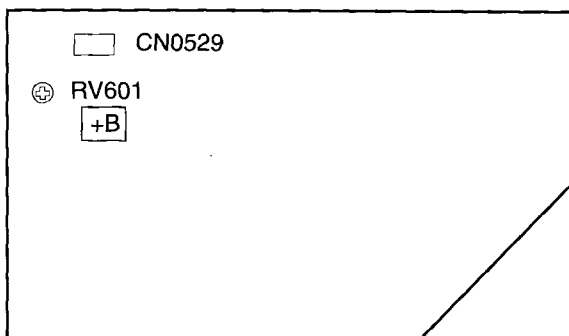
3. Press **OK** button to write data.

If the menu display prevents accurate adjustment, press to clear, to resume, press once again.

## 4-2. VOLUME ELECTRICAL ADJUSTMENTS

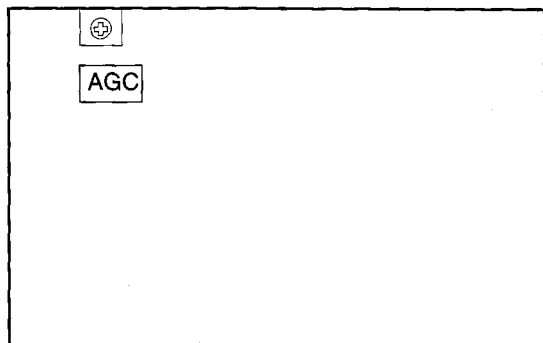
### +B (+135V) ADJUSTMENT (RV601)

#### D BOARD



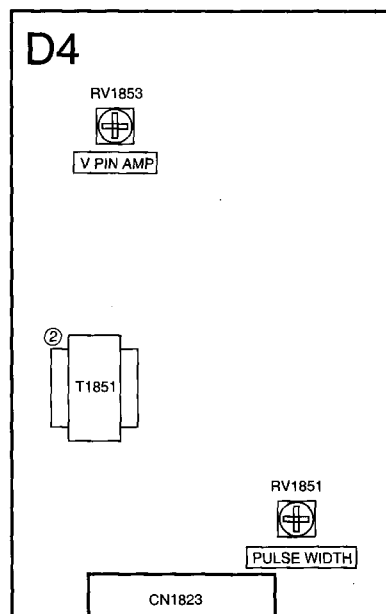
1. Switch on the power to the TV set.
2. Connect a digital multi-meter to pin ① of CN0529 on D board.
3. Adjust RV601 on D board to  $+135V \pm 0.5V$ .

### AGC ADJUSTMENT (IF BLOCK)

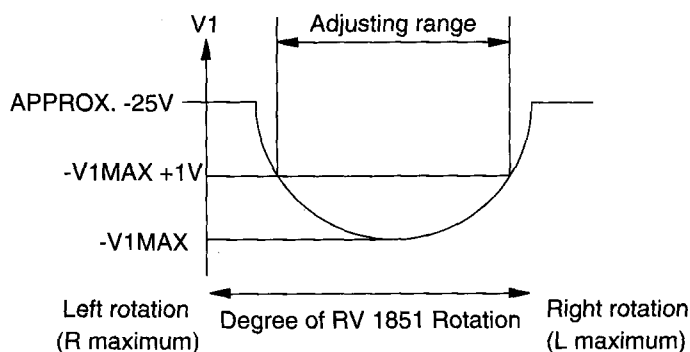


1. Receive an off-air signal.
2. Adjust the AGC VR so that there is no snow noise or cross-modulation visible on the screen.
3. Change the receiving channel and confirm status.

### PULSE WIDTH & V-PIN ADJUSTMENTS (RV 1851/1853)



1. Connect an oscilloscope to pin ② of T1851.
2. Preset RV-1853 to center of its range (mechanical center).
3. Adjust RV-1851 to obtain minimum amplitude.
4. Switch the oscilloscope input to D.C. and adjust RV-1853 to obtain  $-33.2 \pm 0.5V$ .



### 4-3. TEST MODE 2 :

Is available by pressing Test button twice, OSD 'TT' appears. The functions described below are available by pressing the two numbers. To release the Test Mode 2, press 0 twice, or switch the TV to Stand-by Mode.

00	switch Test Mode 2 off
01	picture maximum
02	picture minimum
03	Volume 35%
04	Volume 50%
05	Volume 65%
06	Volume 80%
07	Ageing Condition (Vol min, Picture max, Brightness max, Ageing 2 Mode of CXA1587S, TDA2595 is locked to CXA1587S via PIN 34 of Micro-Controller.)
08	Shipping Condition (Analog Values are RESET due to factory setting, Prog 1 is selected, TT Mode is switched off.
09	dummy
10	Tenth entry is deleted
11	Balance
12	Hue
13-14	dummy
15	Read factory setting from NVM Reads Volume, Balance Treble, Bass, Brightness, Contrast, Hue, Sharpness, Color values from ROM to the actual used values (Last Power Memory)
16	Save actual used values as RESET values Memorize actual used values Balance, Treble, Bass, Hue, Sharpness at RESET position in NVM.
17	Preset Level for AV Sources
18	dummy
19	Stereo Separation
20	Tenth entry is deleted
21	Sub Contrast
22	Sub Color
23	Sub Brightness
24-29	dummy

30	Tenth entry is deleted
31	Green Drive
32	Blue Drive
33	Green Cut Off (Auto Cut Off)
34	Blue Cut Off (Auto Cut Off)
35	Red Cut Off (Manual Cut Off) (Auto Cut Off is switched off)
36	Green Cut Off (Manual Cut Off) (Auto Cut Off is switched off)
37	Blue Cut Off (Manual Cut Off) (Auto Cut Off is switched off)
38	Y-Filter adjustment (Trap is switched off and TDA9145 is switched in forced NTSC Mode)
39	dummy
40	Tenth entry is deleted
41	Default setting of CXA1587S (Only available in Prog 99)
42	Default setting of CXD2018Q (Only available in Prog 99)
43	Default setting of CXA1526 (Only available in Prog 99)
44	(all Port High) Not yet
45	(all Port High) Not yet
46-48	dummy
49	Erase the NVM Testbyte (this byte detects already stored NMV's) After selecting this function, switch the TV Off and On → the NVM will be preset by the Micro-Controller. (Not the channel data)

**Note:** For No 35, 36, 37 and 38 special pressing (AKB, forced Color Mode, Trap) is selected. After selecting a new Test Mode Number, the AKB is switched ON, the Trap is switched ON and TDA9145 is switched to Auto Search Mode.

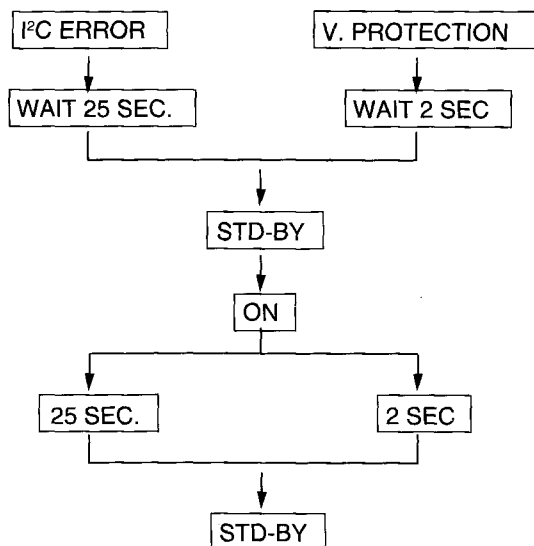
In Test Mode 2 the Menu display is switchable by the Speaker-Off button.



#### 4-4. ERROR MESSAGE

Self diagnostic system operates as follows.

- When the microprocessor is unable to receive an acknowledgement back from the device, the LED starts flashing according to the table below.



In the case of more than one error in parallel, the blinking error shows max priority according to the error number (e.g. error 2 and error 5 appear together, then LEDs show error 2).

**ERROR TABLE**

ERROR COUNT	IC TYPE	FUNCTION
1	II C BUS	SDA low
2	X24C16	EPROM
3	SDA3202	Tuner PII
4	TDA9145	Colour decoder
5	CXA1587S	RGB/Jungle
6	TDA6612	Sound processor
7	CXD2018Q	V deflection
8	CXA1545	AV switch
11	SDA5248	Text
13		V protection

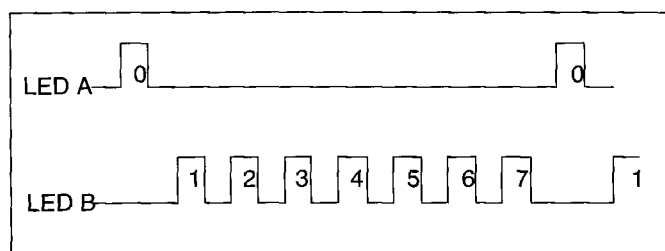
Stand By LED blinking

No 1K return

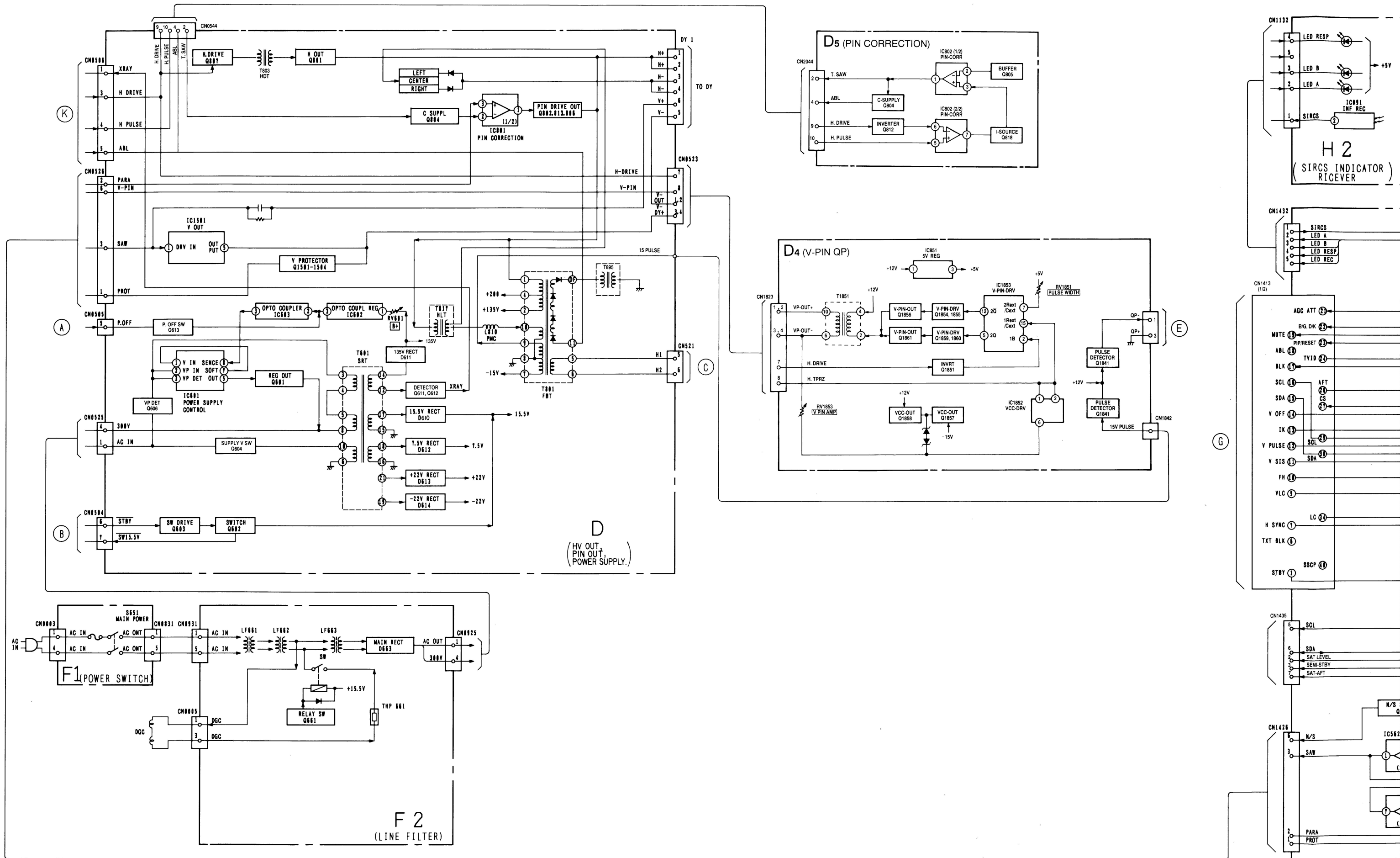
#### 4-5. ERROR I²C BUS DIAGNOSTIC SYSTEM FOR AE2-A CHASSIS.

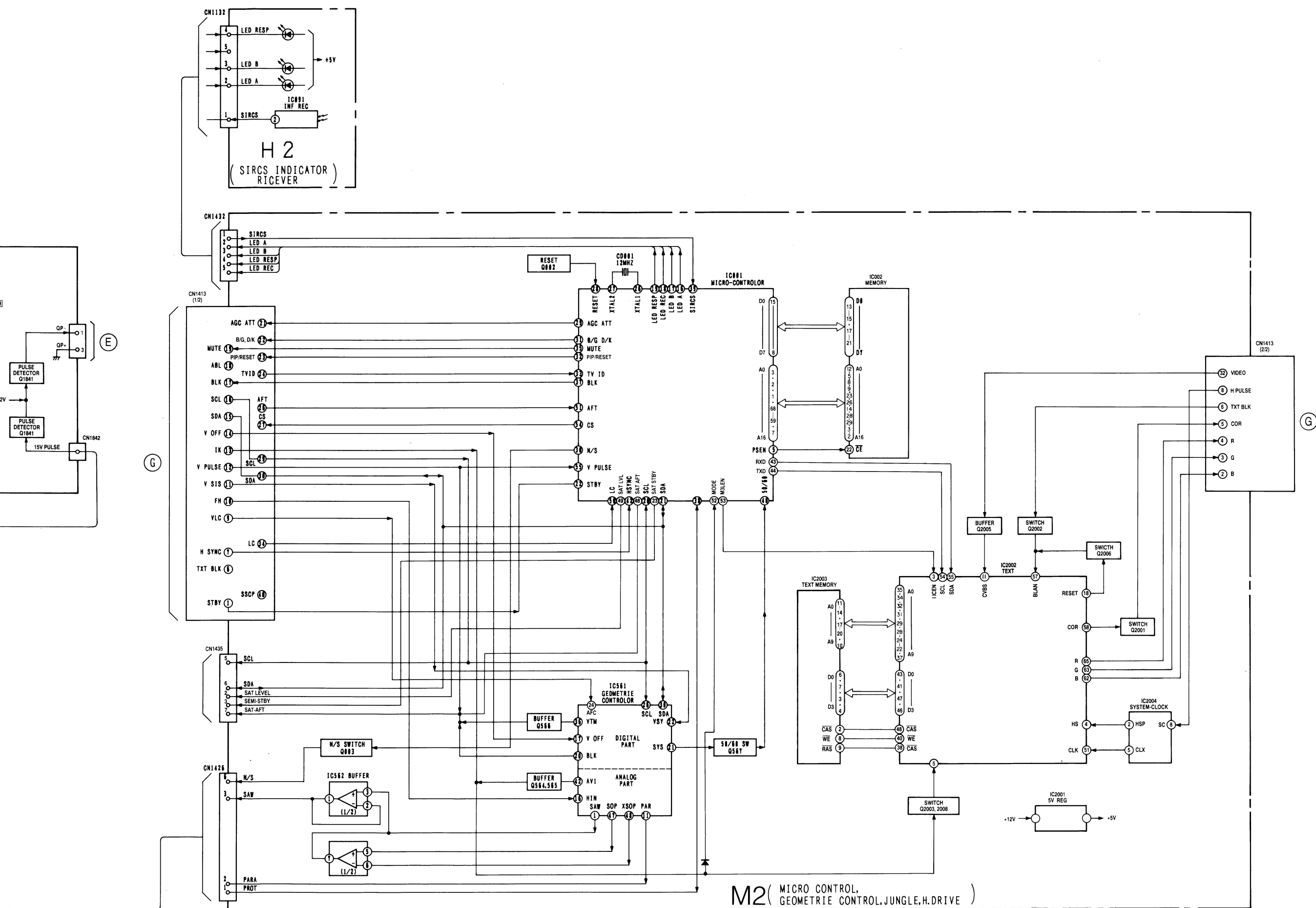
For all IC's used in the AE 2-A chassis which are necessary to obtain picture and sound there is an inbuilt I²C Bus diagnostic system.

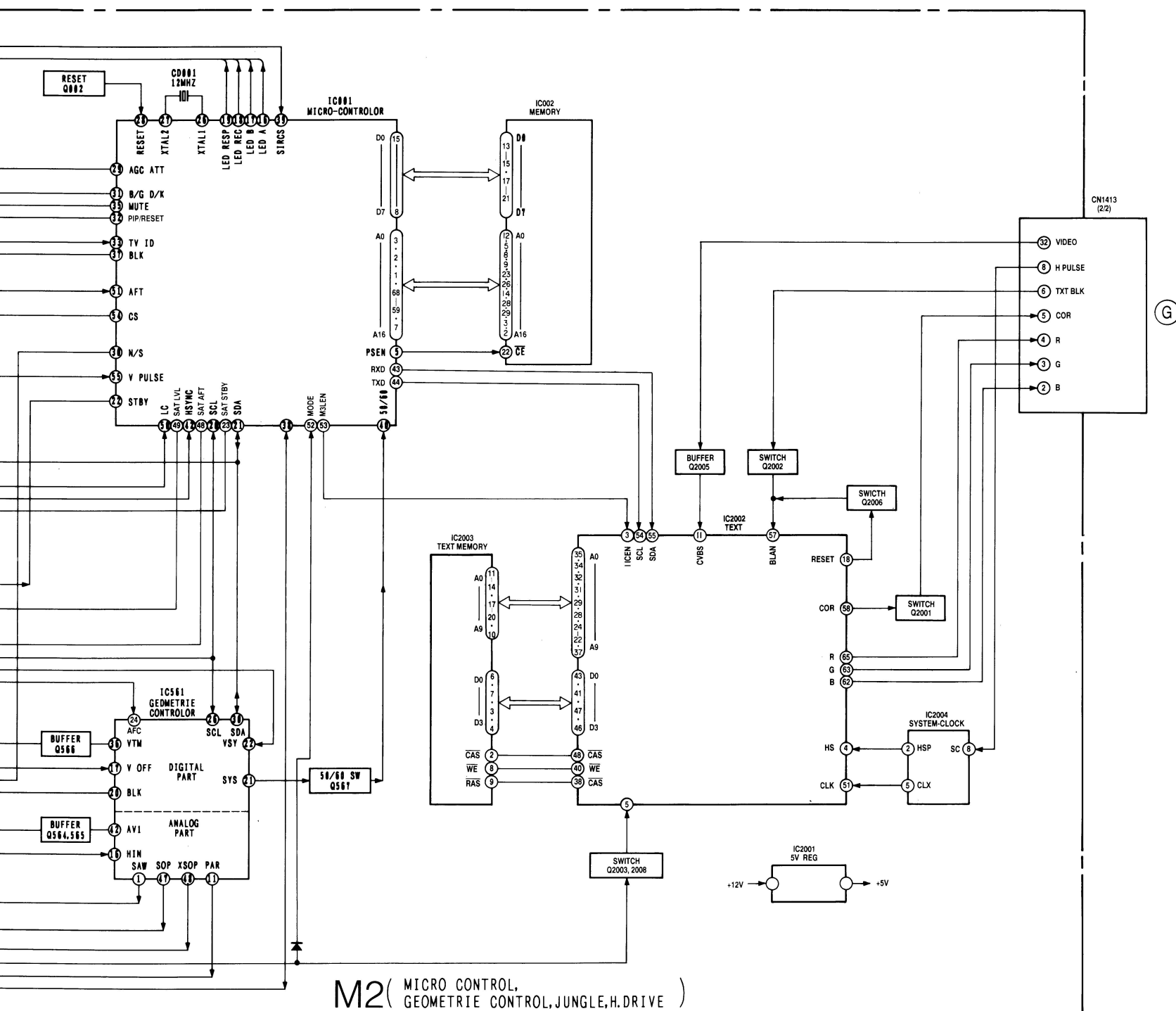
In the case of no acknowledge bit, LED A and LED B start blinking as shown.



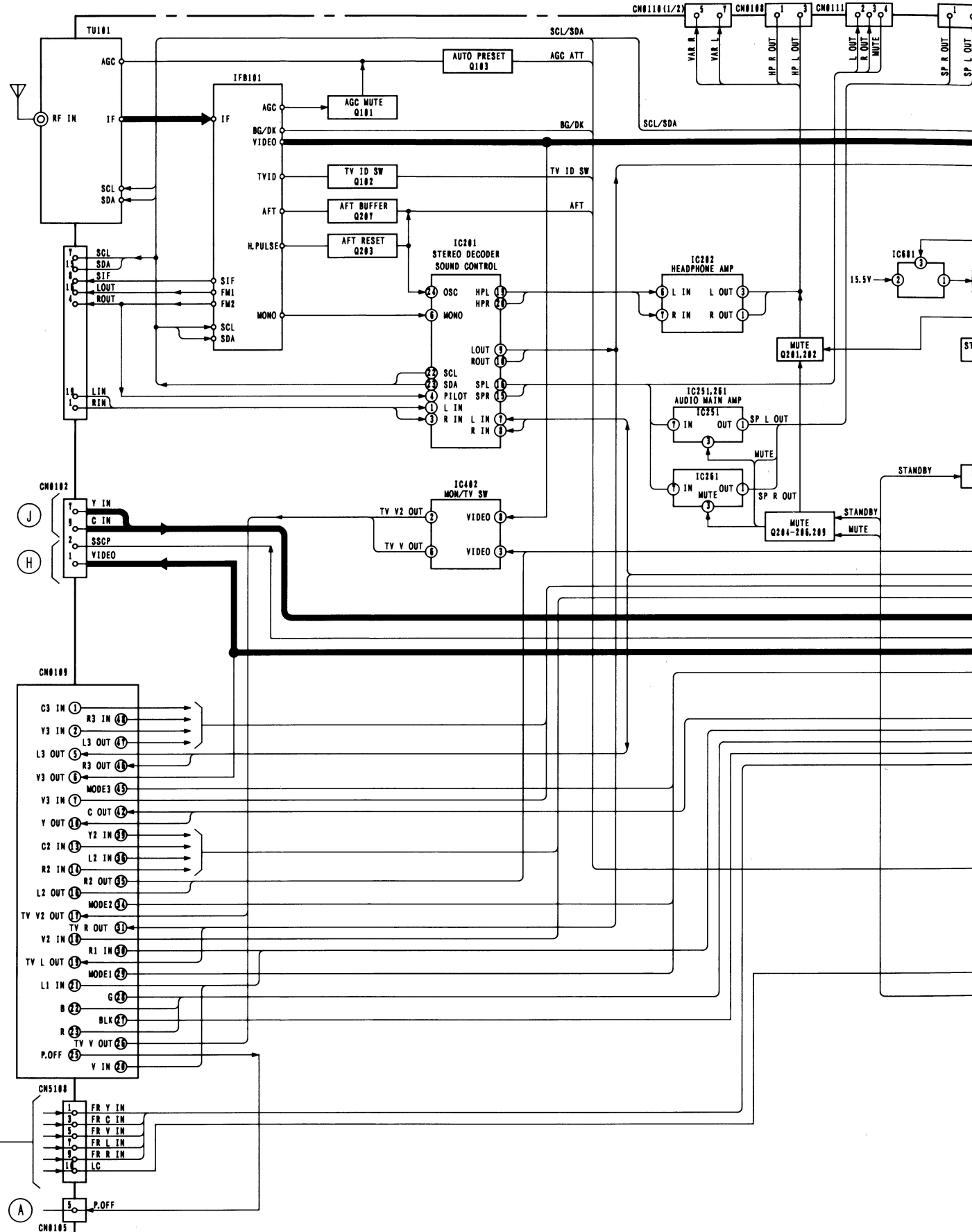
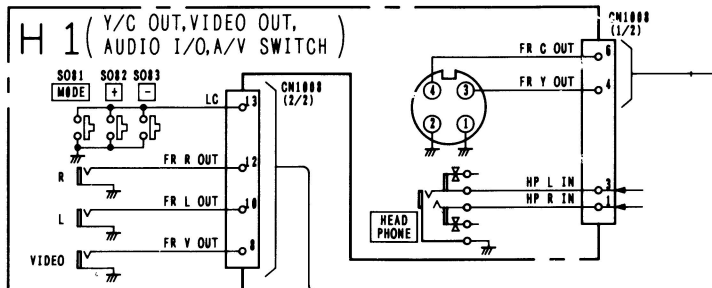
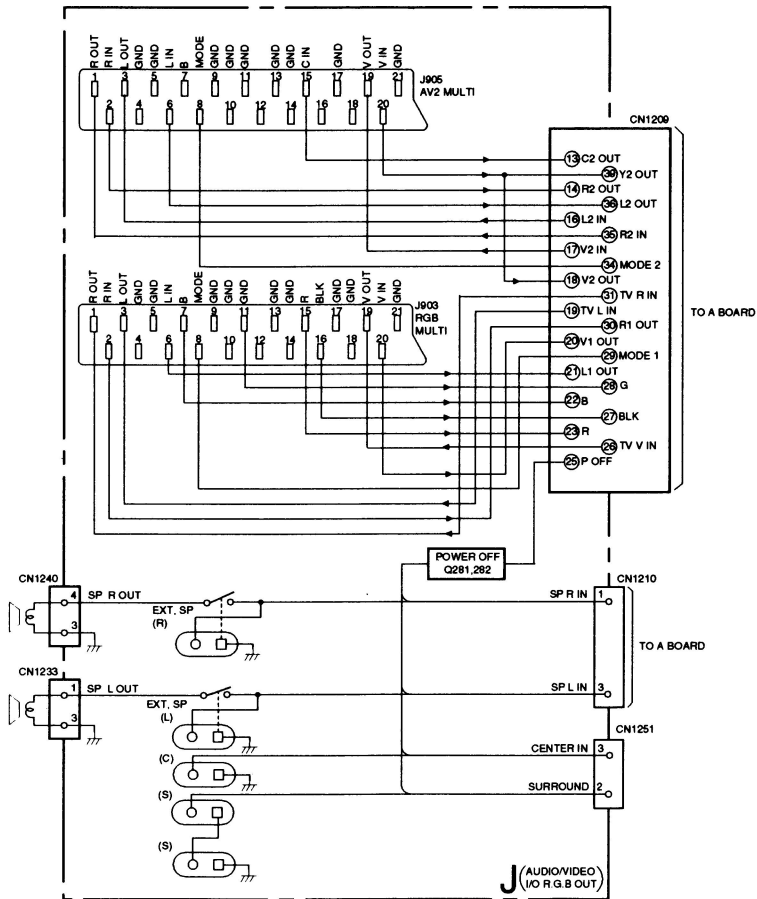
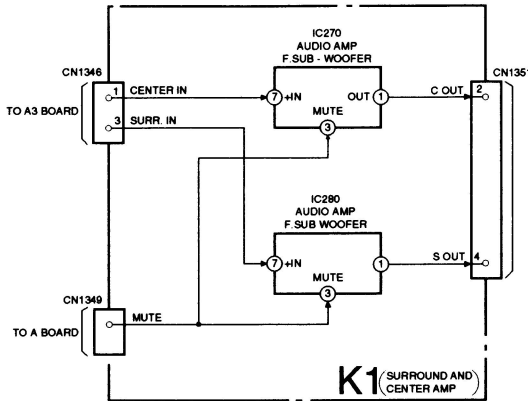
### 5-1. BLOCK DIAGRAM (1)

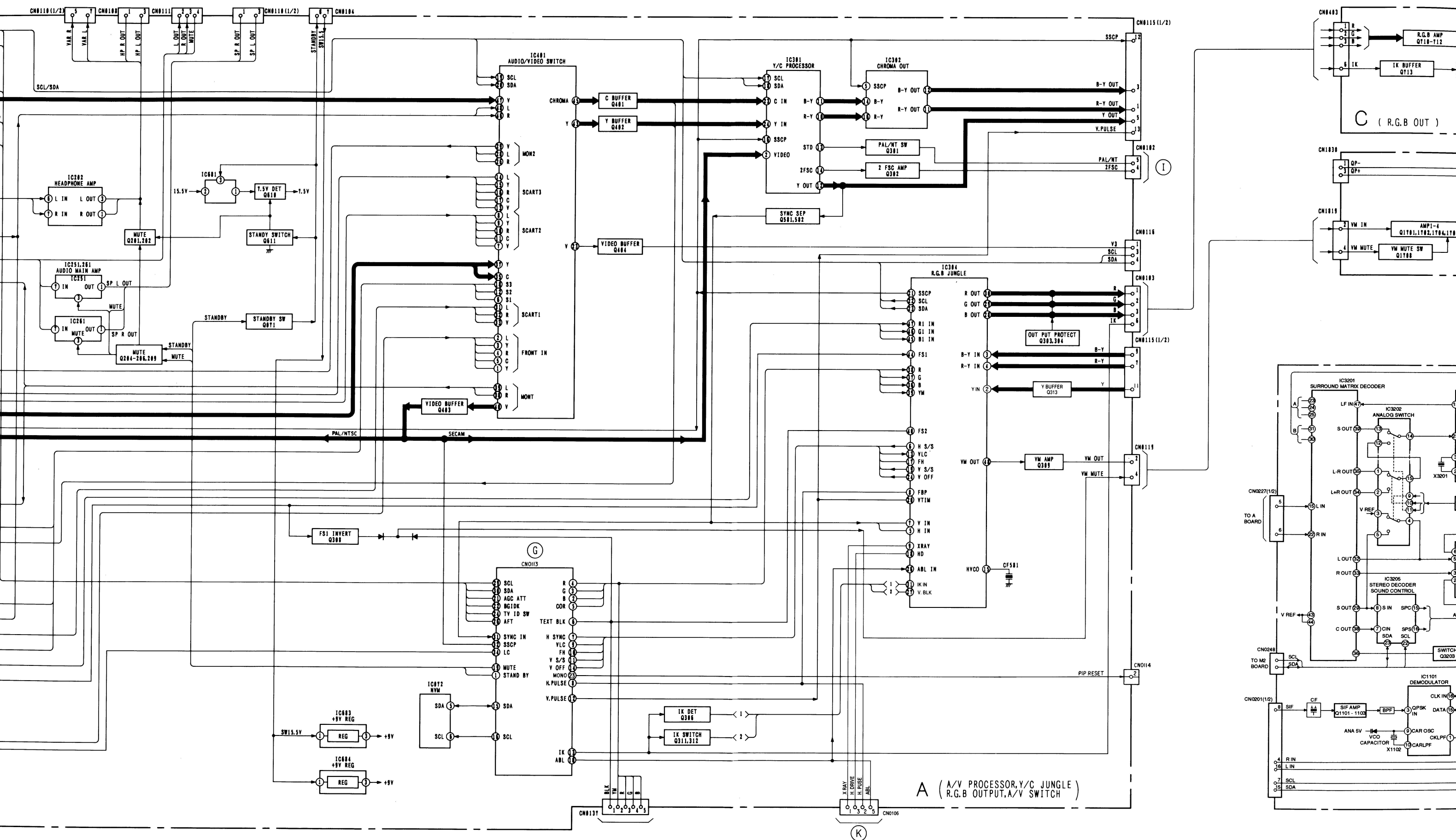






### BLOCK DIAGRAM (2)

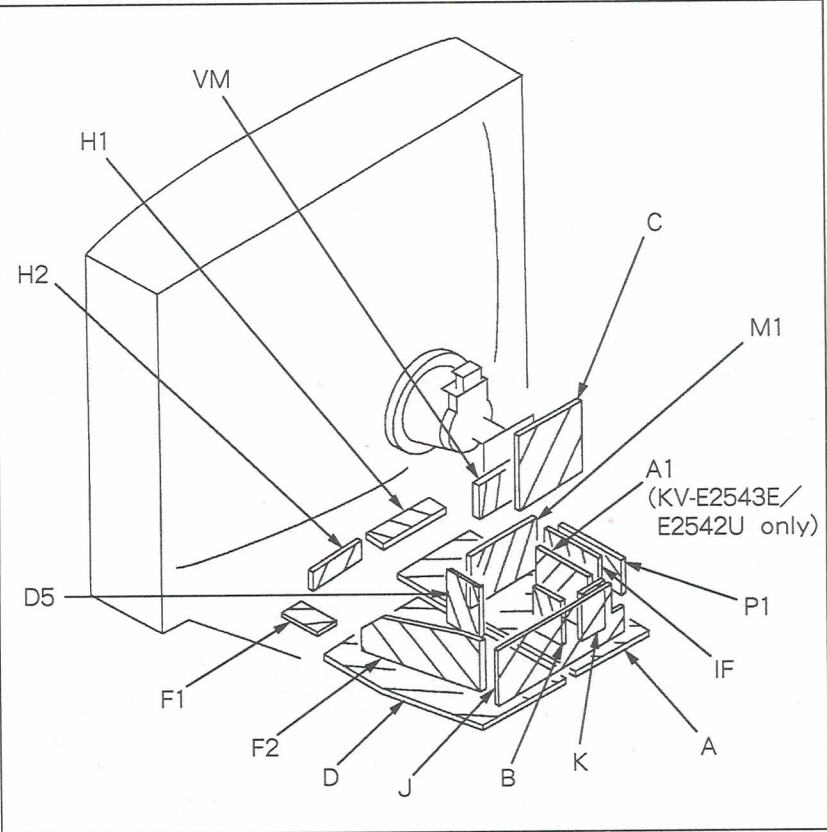










5-2. CIRCUIT BOARDS LOCATION



Reference information

RESISTOR	RN	: METAL FILM
	RC	: SOLID
	FPRD	: NONFLAMMABLE CARBON
	FUSE	: NONFLAMMABLE FUSIBLE
	RS	: NONFLAMMABLE METAL OXIDE
	RB	: NONFLAMMABLE CEMENT
	RW	: NONFLAMMABLE WIREWOUND
	※	: ADJUSTMENT RESISTOR
COIL	LF-8L	: MICRO INDUCTOR
CAPACITOR	TA	: TANTALUM
	PS	: STYROL
	PP	: POLYPROPYLENE
	PT	: MYLAR
	MPS	: METALIZED POLYESTER
	MPP	: METALIZED POLYPROPYLENE
	ALB	: BIPOLAR
	ALT	: HIGH TEMPERATURE
	ALR	: HIGH RIPPLE




**Note:** The components identified by shading and mark  are critical for safety. Replace only with part number specified.

**Note:** Les composants identifiés par une trame et par une marque  sont d'une importance critique pour la sécurité. Ne les remplacer que par des pièces de numéro spécifié.






5-3. SCHEMATIC DIAGRAMS AND PRINTED WIRING BOARDS

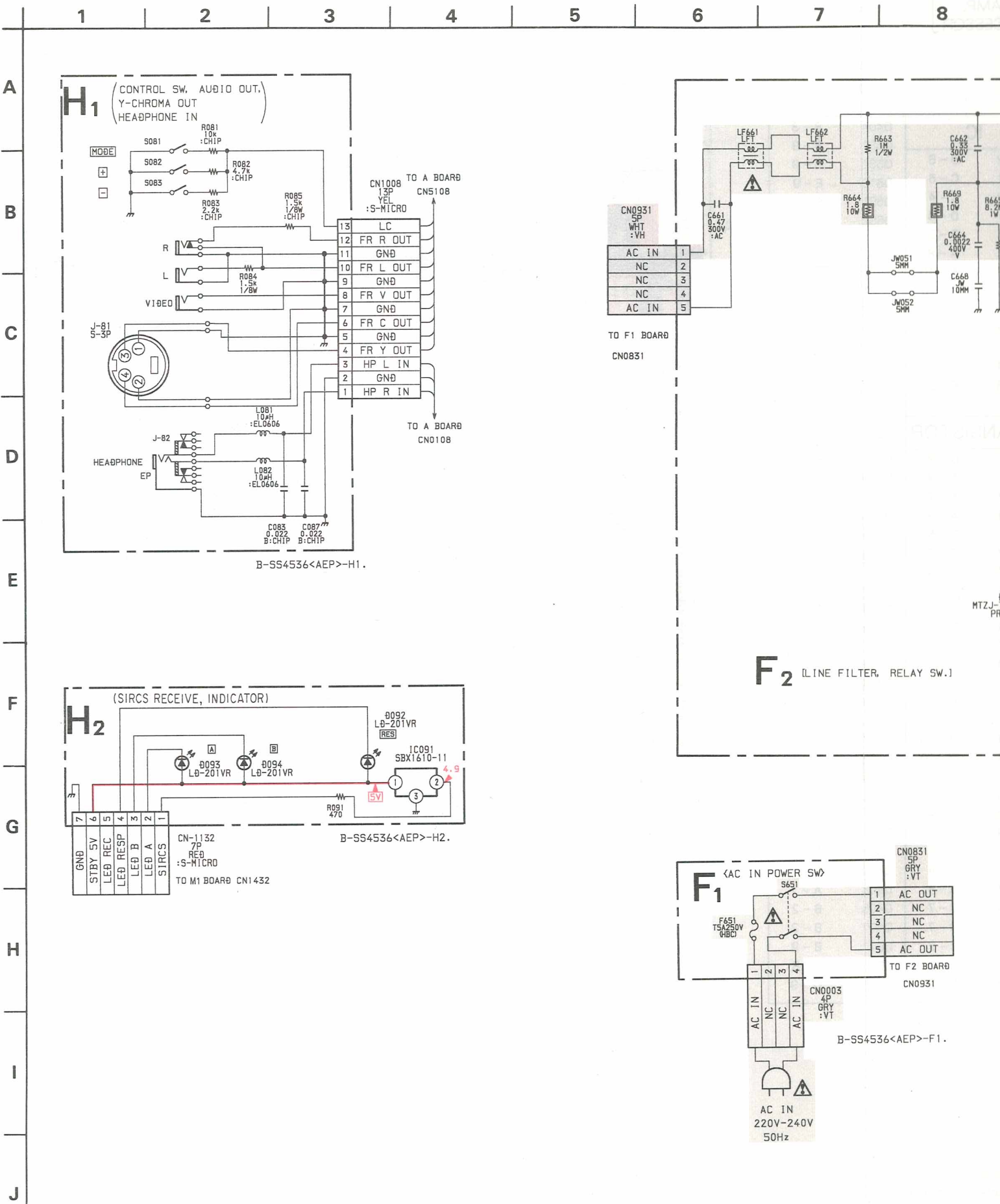
Note :

- All capacitors are in  $\mu F$  unless otherwise noted.  
pF :  $\mu \mu F$  50WV or less are not indicated except for electrolytic.
- Indication of resistance, which dose not have one for rating electrical power, is as follows.

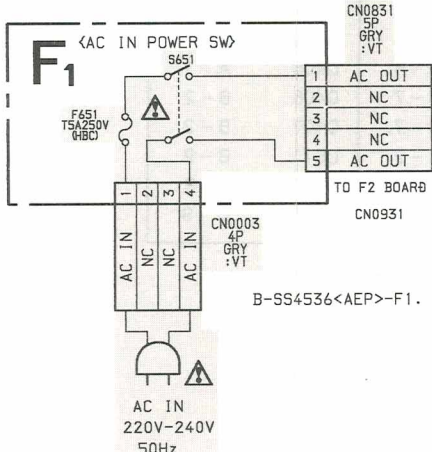
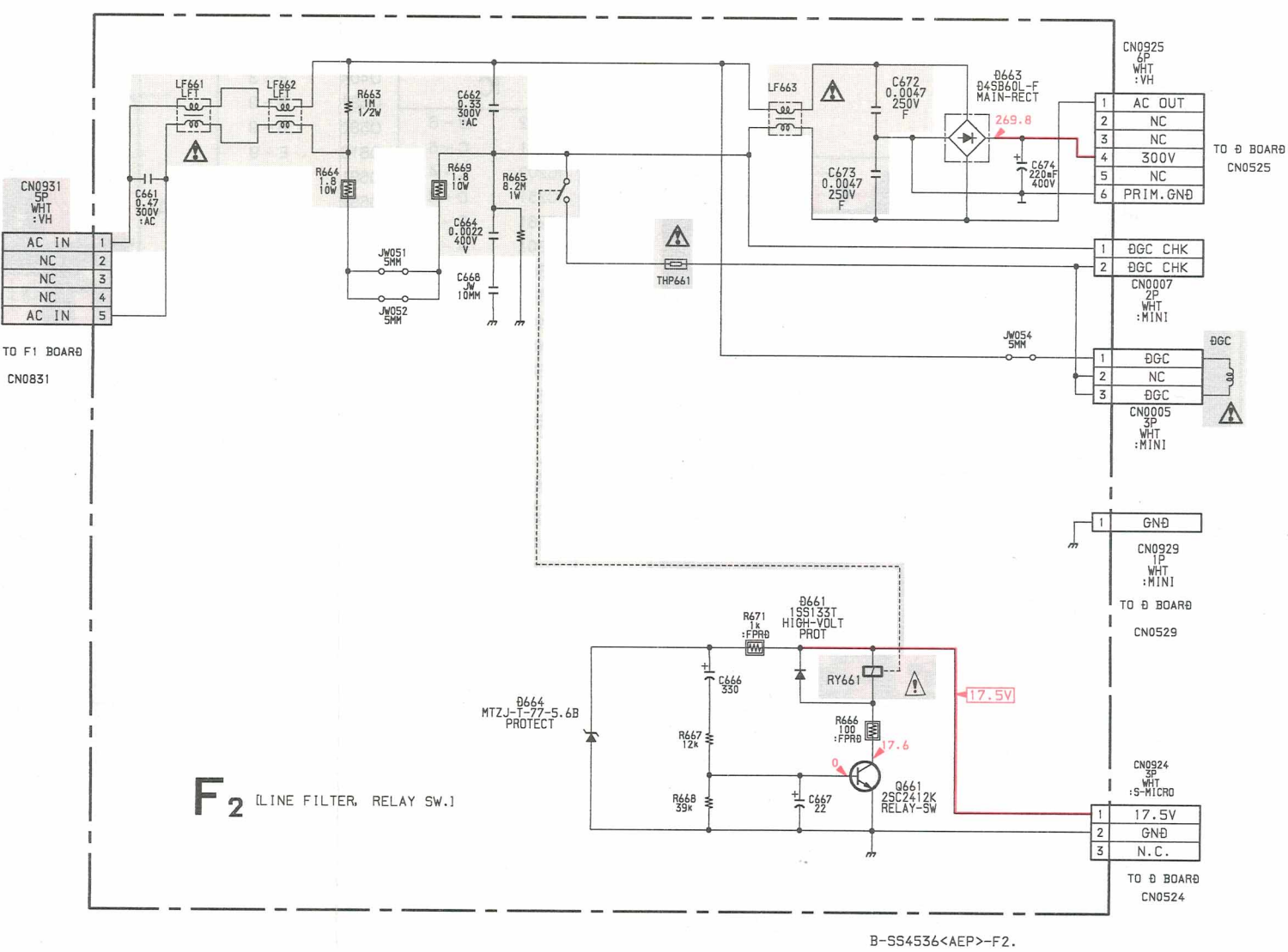
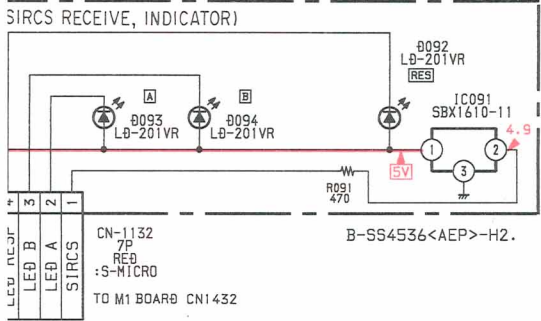
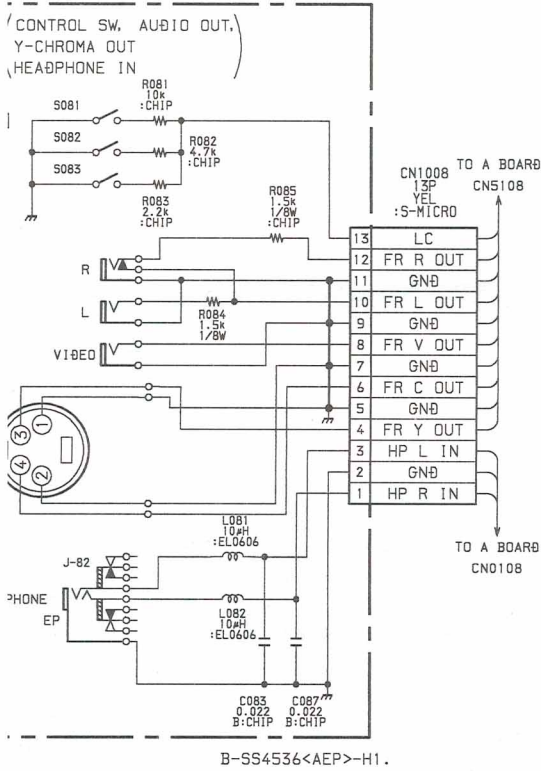
Pitch : 5mm  
Rating electrical power :  $\frac{1}{4}W$
- Chip resistor is in 1/10W.
- All resistors are in ohms.  
k  $\Omega$  = 1000  $\Omega$ , M  $\Omega$  = 1000K  $\Omega$
-  : nonflammable resistor.
-  : fusible resistor.
- $\Delta$  : internal component.
-  : panel designation or adjustment for repair.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.

- All voltages are in V.
- Readings are taken with a 10M  $\Omega$  digital multimeter.
- Readings are taken with a color-bar signal input.
- Voltage variations may be noted due to normal production tolerances.

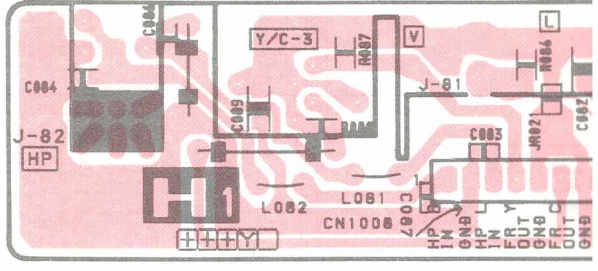
-  : B+ bus.
-  : B- bus.
-  : signal path.(RF)
-  : earth - ground
-  : earth - chassis



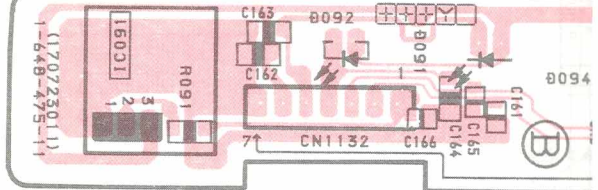




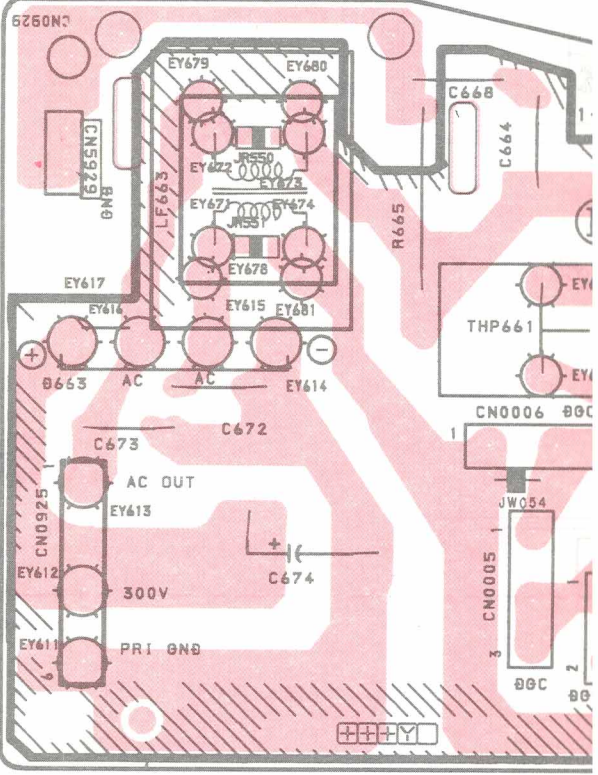
- H1 BOARD -



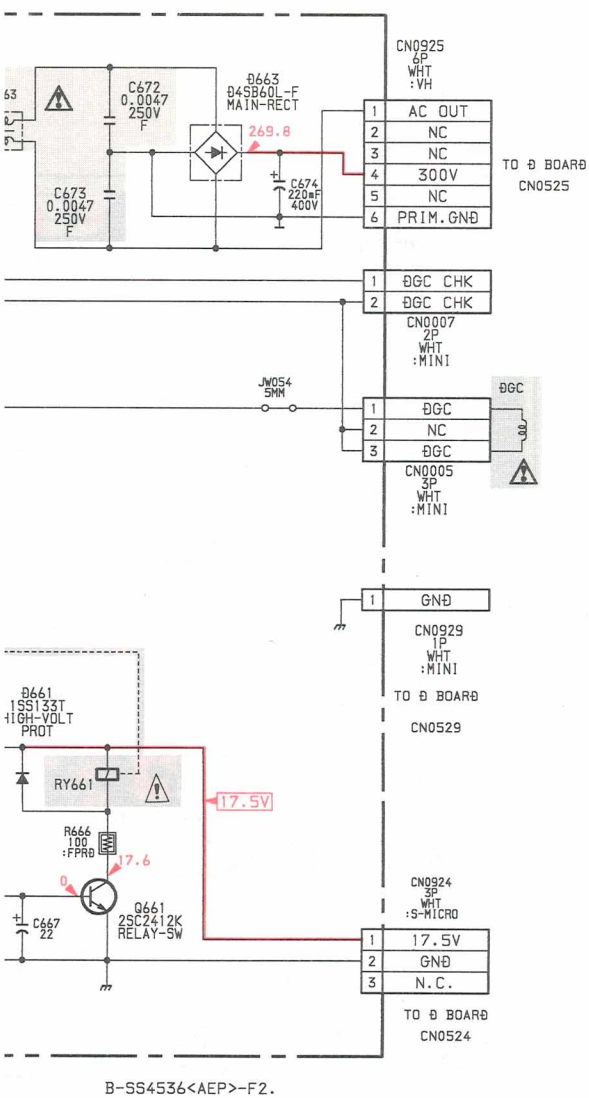
- H2 BOARD -



- F2 BOARD -







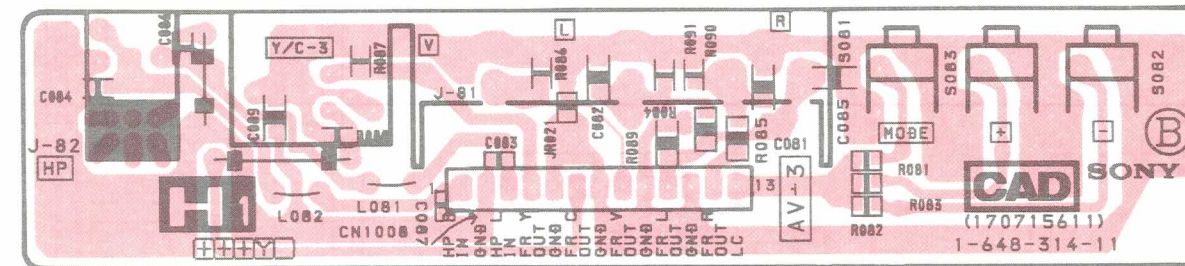
**H1** [CONTROL SW, AUDIO OUT  
Y - CHROMA OUT, HEADPHONE]

**H2** [SIRCS RECEIVE]  
[INDICATOR]

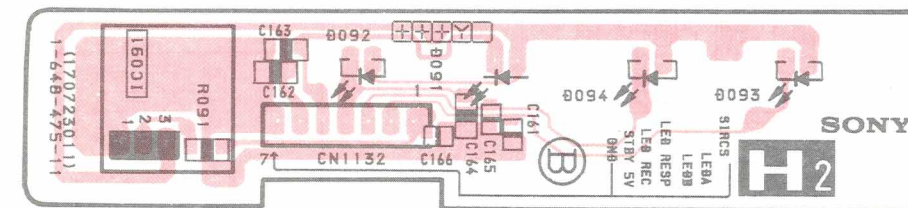
**F2** [LINE FILTER,  
RELAY SW

**F1** [AC IN POWER SW]

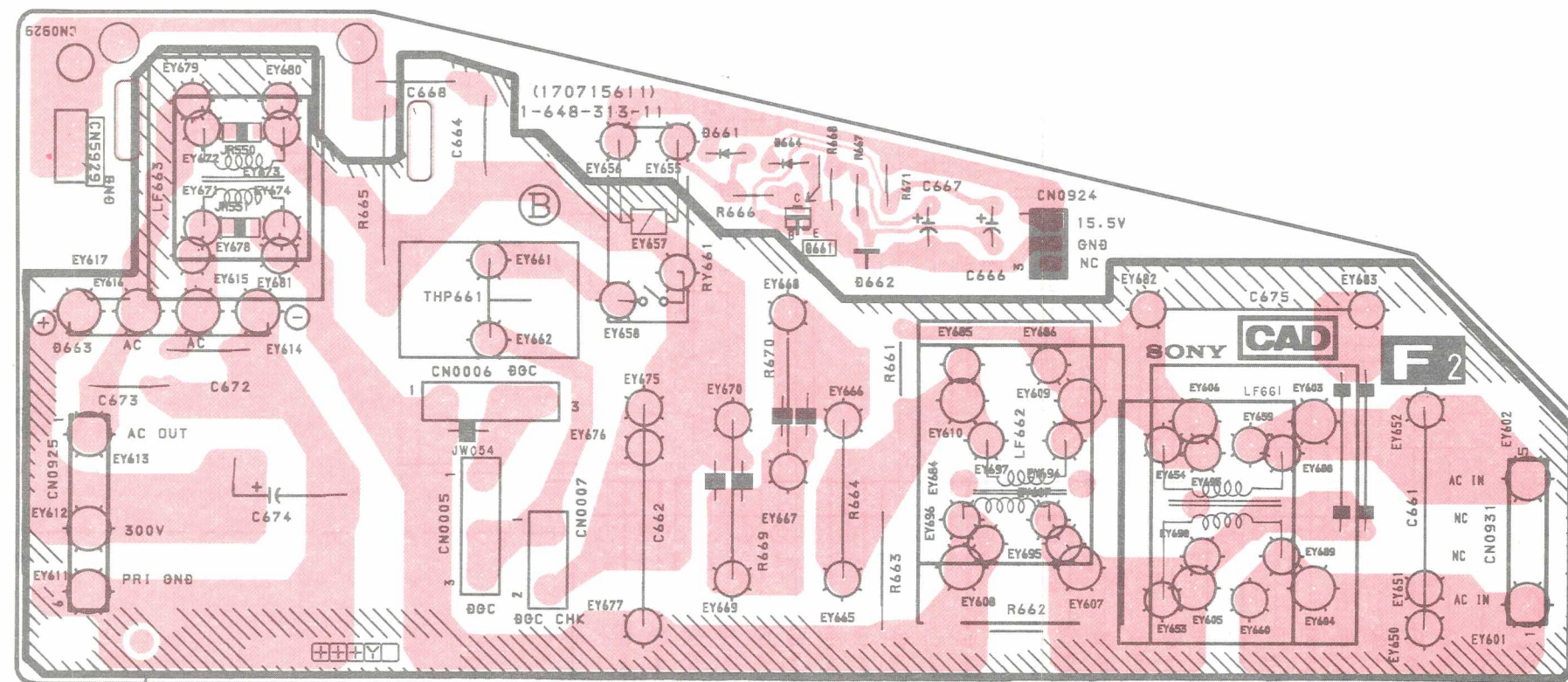
– H1 BOARD –



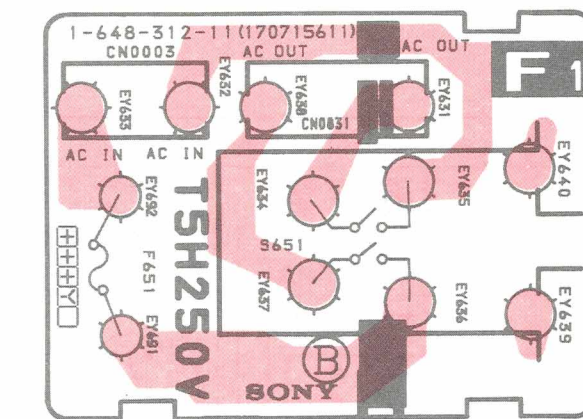
– H2 BOARD –



– F2 BOARD –



– F1 BOARD –



### Schematic diagrams

← F1 F2 H1 H2 boards

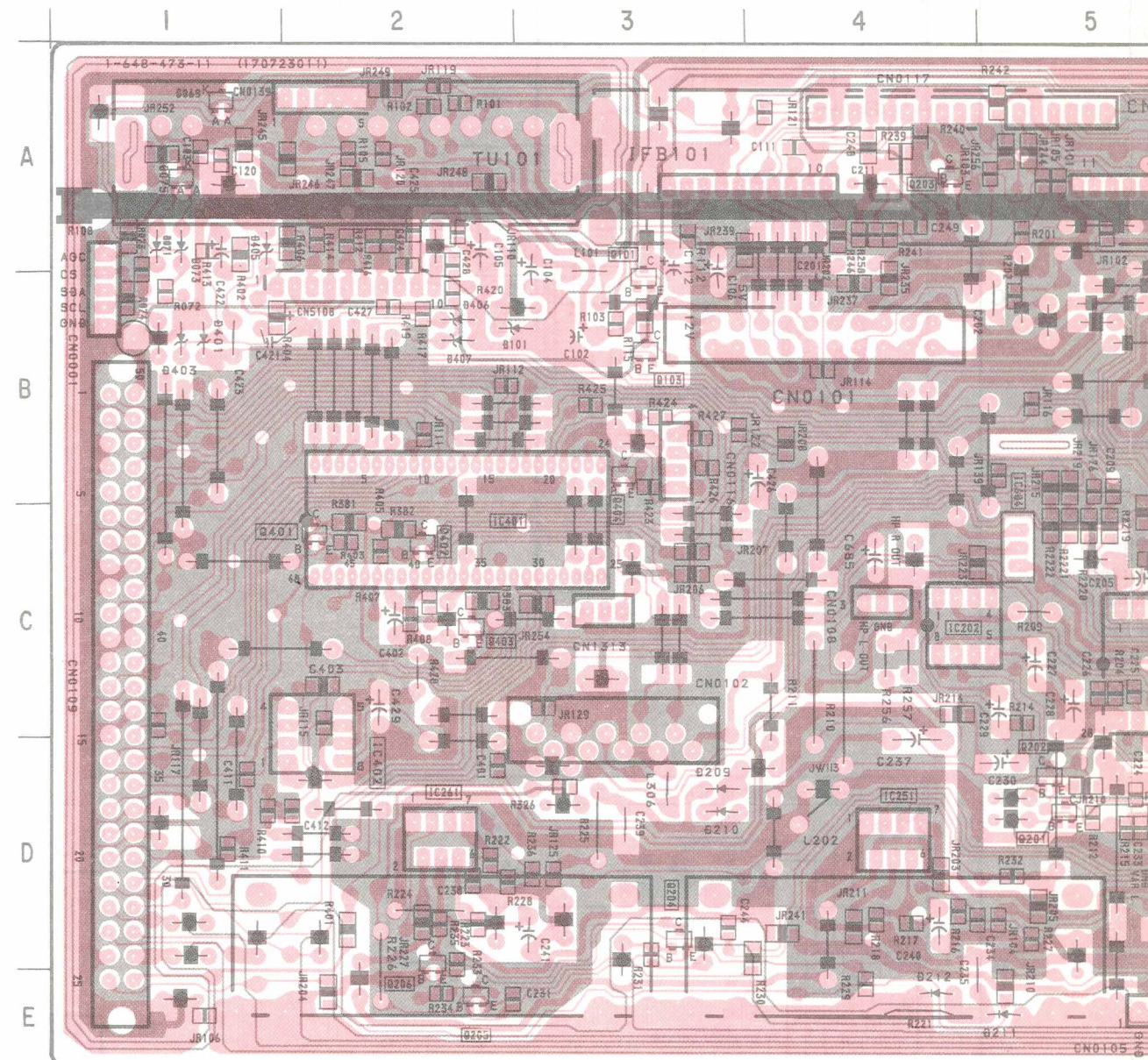
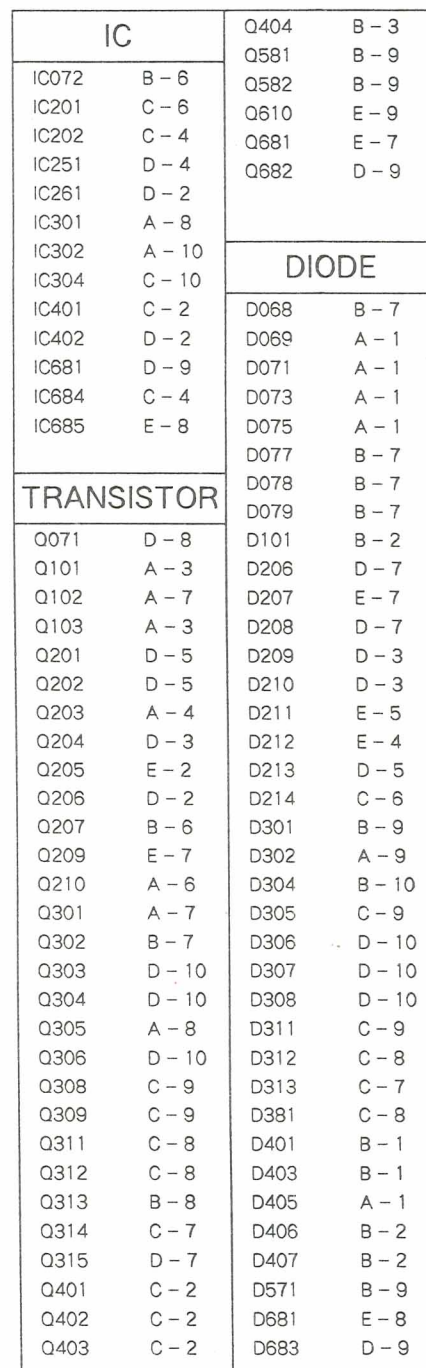
### Schematic diagrams

**J** boards →









-  : Pattern from the side which enables seeing.
-  : Pattern of the rear side.

( AUDIO IN/OUT,  
Y-CHROMA IN/OUT,  
VIDEO IN/OUT )

B-SS4584<EUR>-J..

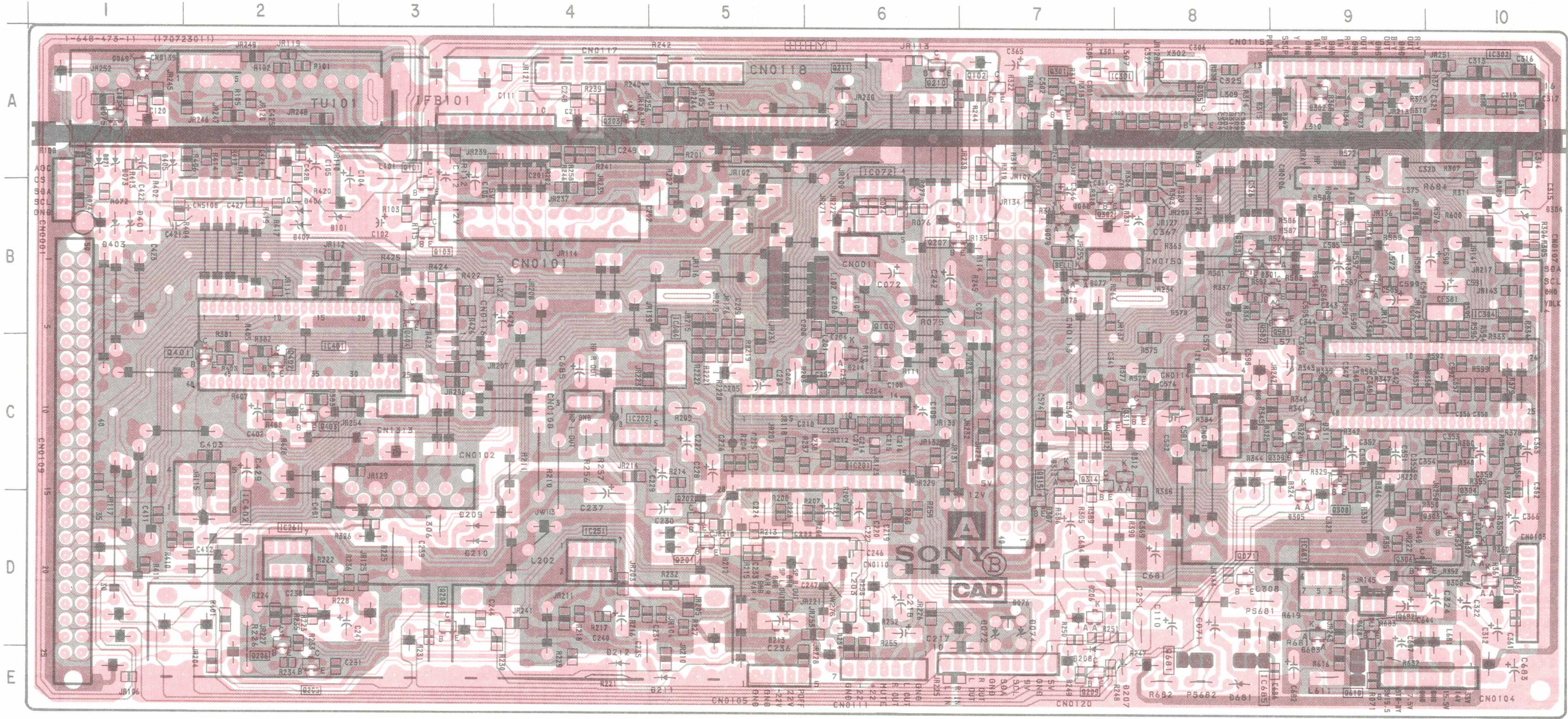


MP,  
SSOR

IC	Q404 B-3	
	Q581	B-9
B-6	Q582	B-9
C-6	Q610	E-9
C-4	Q681	E-7
D-4	Q682	D-9
D-2		
A-8		
A-10		
C-10	DIODE	
C-2	D068	B-7
D-2	D069	A-1
D-9	D071	A-1
C-4	D073	A-1
E-8	D075	A-1
	D077	B-7
	D078	B-7
	D079	B-7
	D101	B-2
	D206	D-7
	D207	E-7
	D208	D-7
	D209	D-3
	D210	D-3
	D211	E-5
	D212	E-4
	D213	D-5
	D214	C-6
	D301	B-9
	D302	A-9
	D304	B-10
	D305	C-9
	D306	D-10
	D307	D-10
	D308	D-10
	D311	C-9
	D312	C-8
	D313	C-7
	D381	C-8
	D401	B-1
	D403	B-1
	D405	A-1
	D406	B-2
	D407	B-2
	D571	B-9
	D681	E-8
	D683	D-9

ISISTOR		
D-8		
A-3		
A-7		
A-3		
D-5		
D-5		
A-4		
D-3		
E-2		
D-2		
B-6		
E-7		
A-6		
A-7		
B-7		
D-10		
D-10		
A-8		
D-10		
C-9		
C-9		
C-8		
C-8		
B-8		
C-7		
D-7		
C-2		
C-2		
C-2		

- A BOARD -



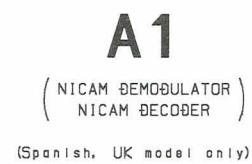
Note :

- Pattern from the side which enables seeing.
- Pattern of the rear side.

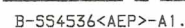
Pattern from the side which enables seeing.

Pattern of the rear side.



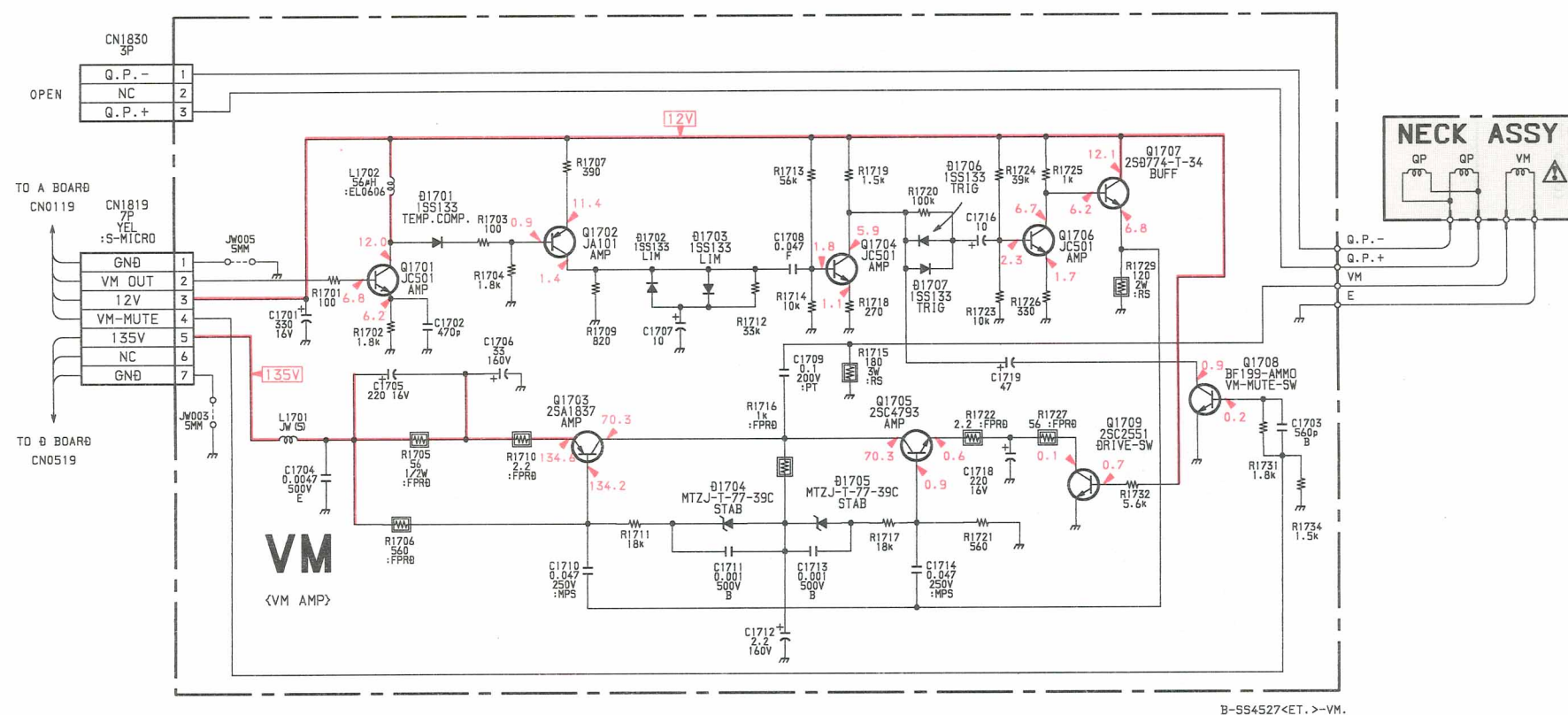
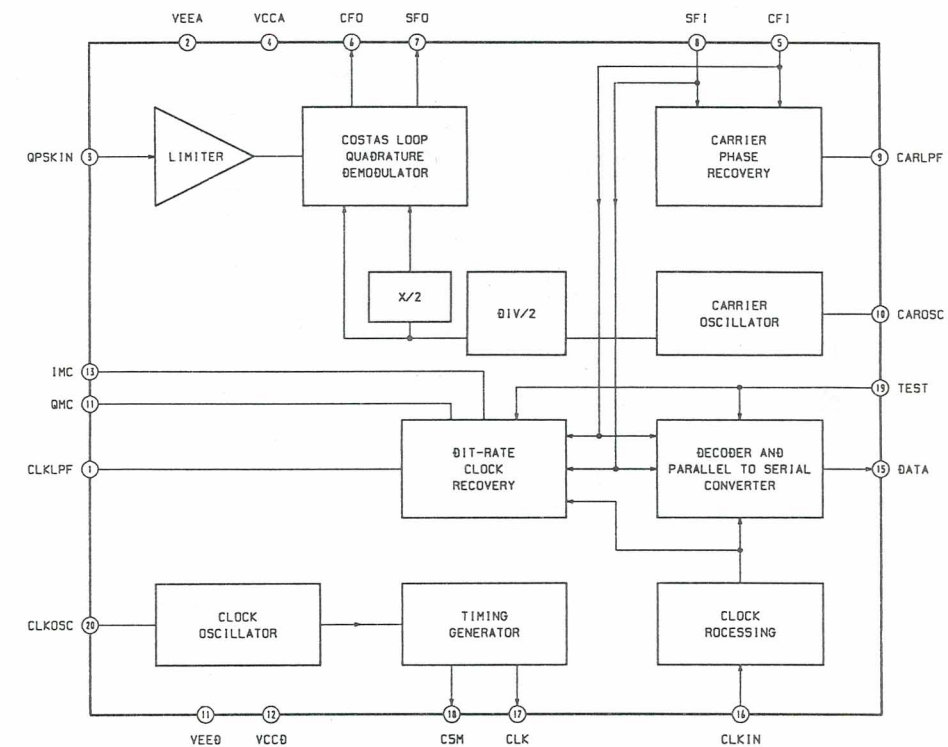


	BP1
	C11
	CF1
	CF1
	L11
	JR1
	X11



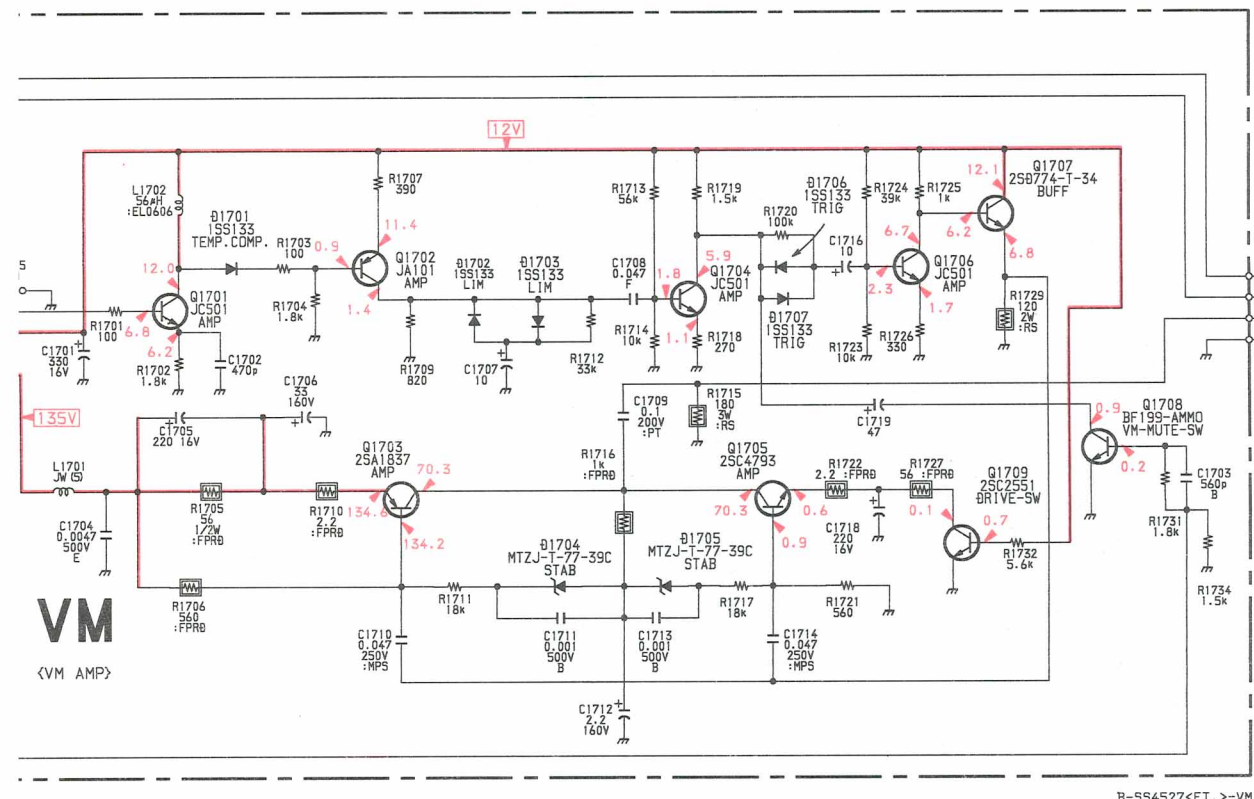
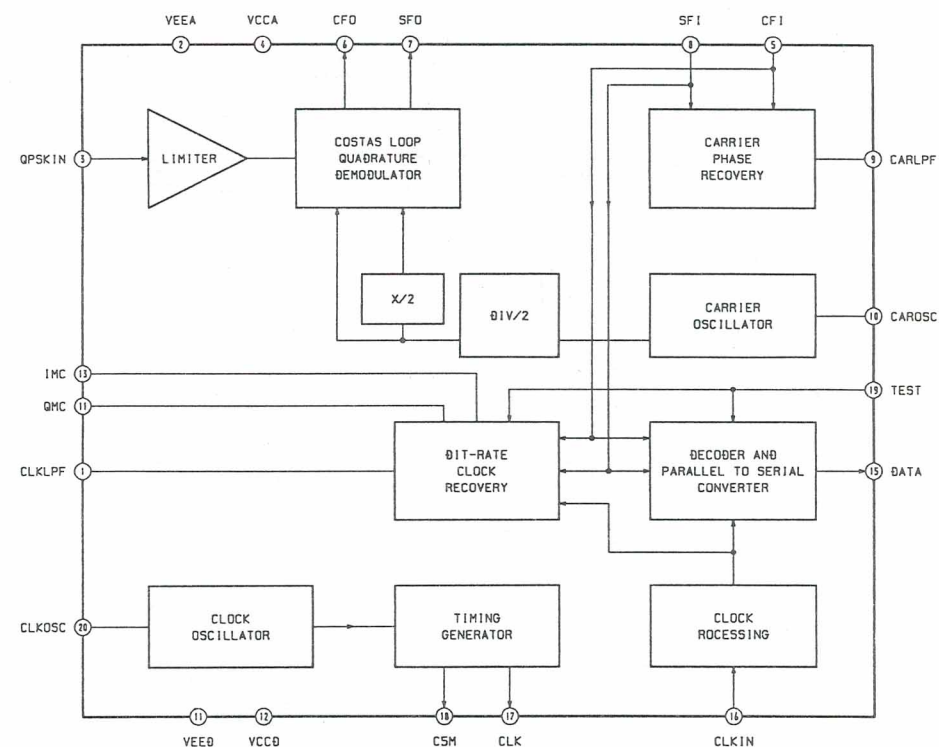
**A1 BOARD \* MARK**

Model	Spanish	UK
BP1101	5.850MHz	6.552MHz
C1159	—	47PF/50V
CF1101	—	6.0MHz
CF1102	5.5MHz	—
L1105	—	1MMH
JR1101	0 1/8W	—
X1102	11.700MHz	13.104MHz

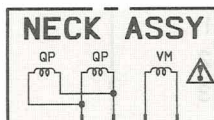




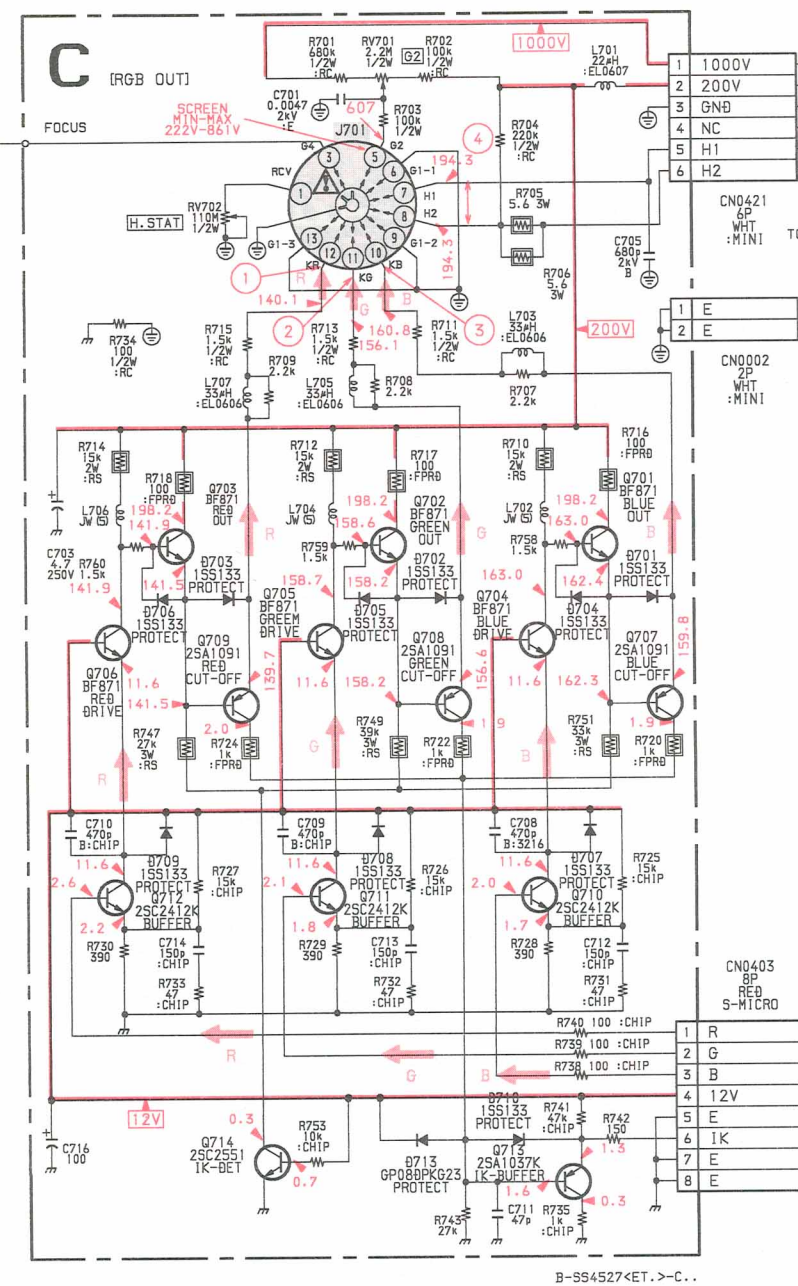
# • A1 BOARD IC1101 TDA8732



B-SS4527&lt;ET.&gt;-VM.



TO Ø BOARD FV T801

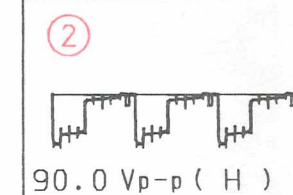


TO Ø BOARD CN0521

TO Ø BOARD CN5521

TO A BOARD CN0103

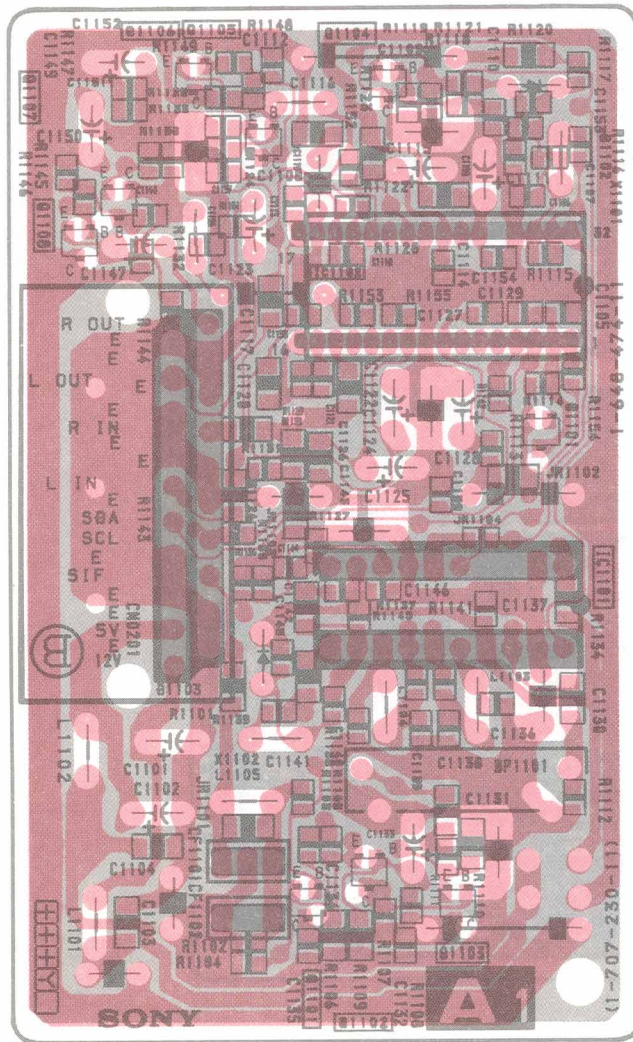
## • WAVEFORMS C BOARD



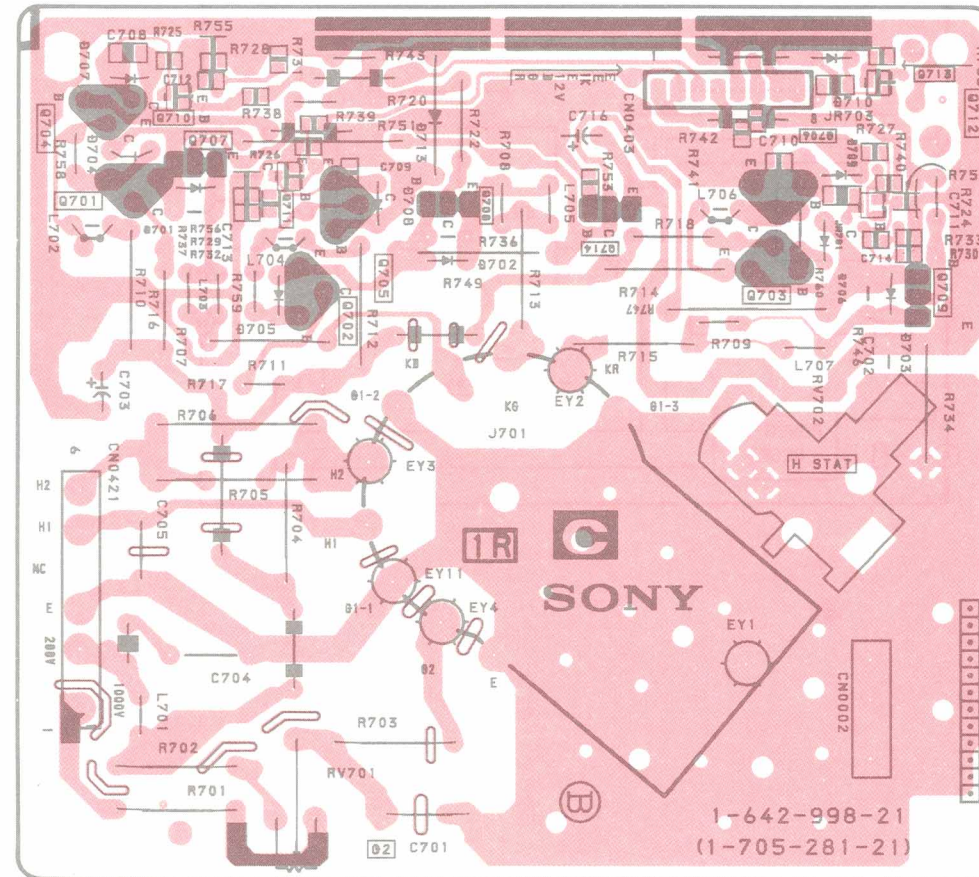


**A1** [NICAM DECODER,  
NICAM DEMODULATOR] **C** [R.G.B OUT] **VM** [VM AMP]

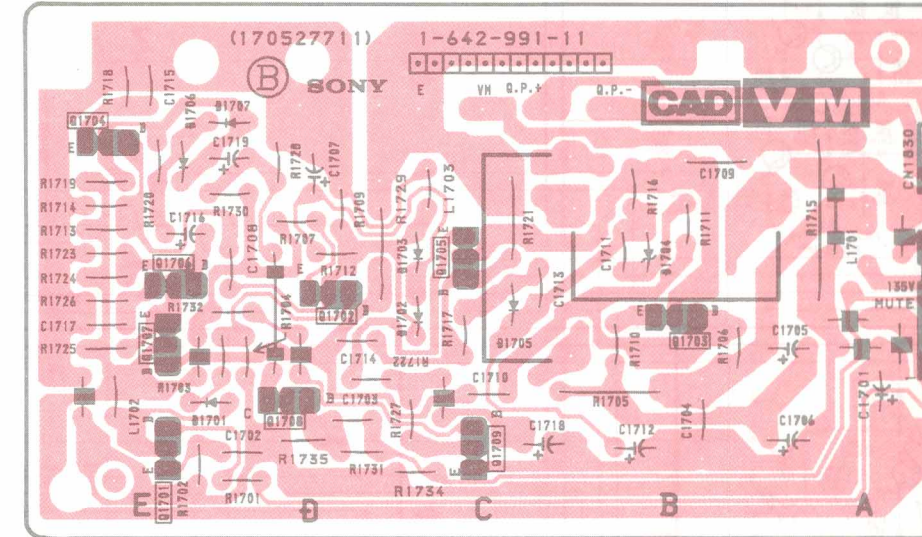
– A1 BOARD – (Spanish, UK Model only)



– C BOARD –



– VM BOARD –

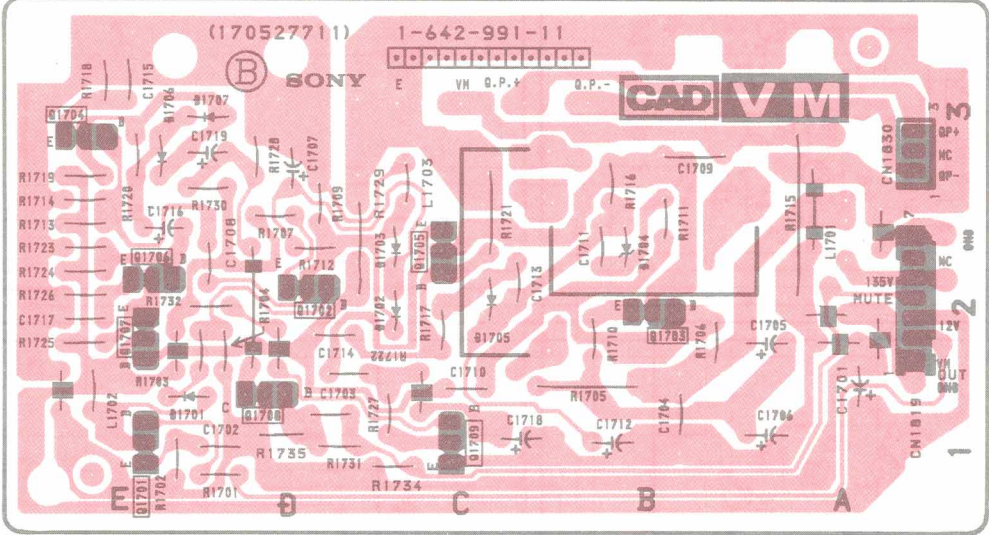
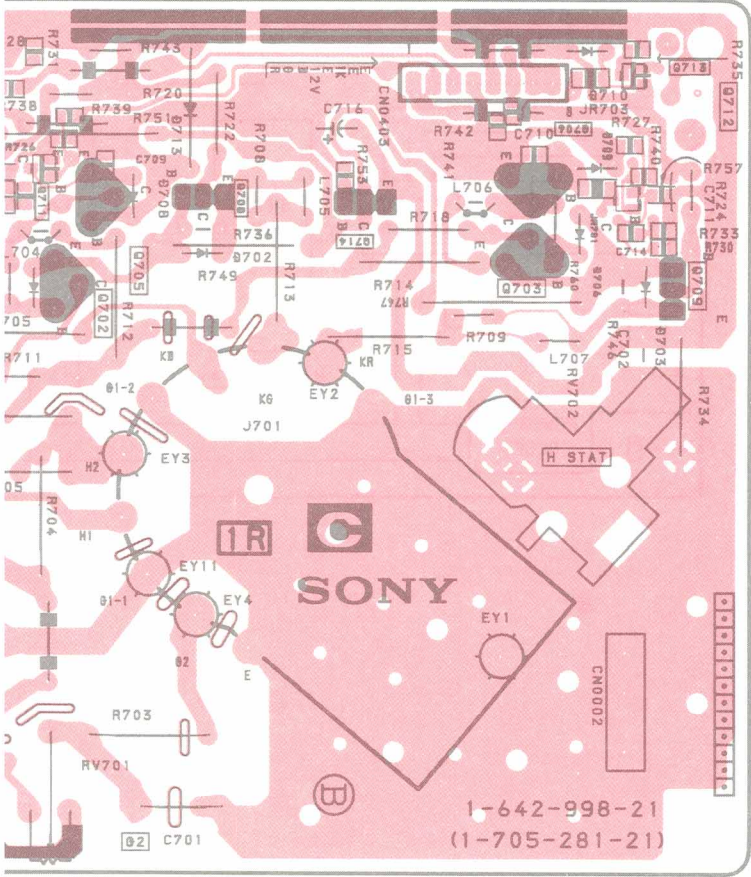


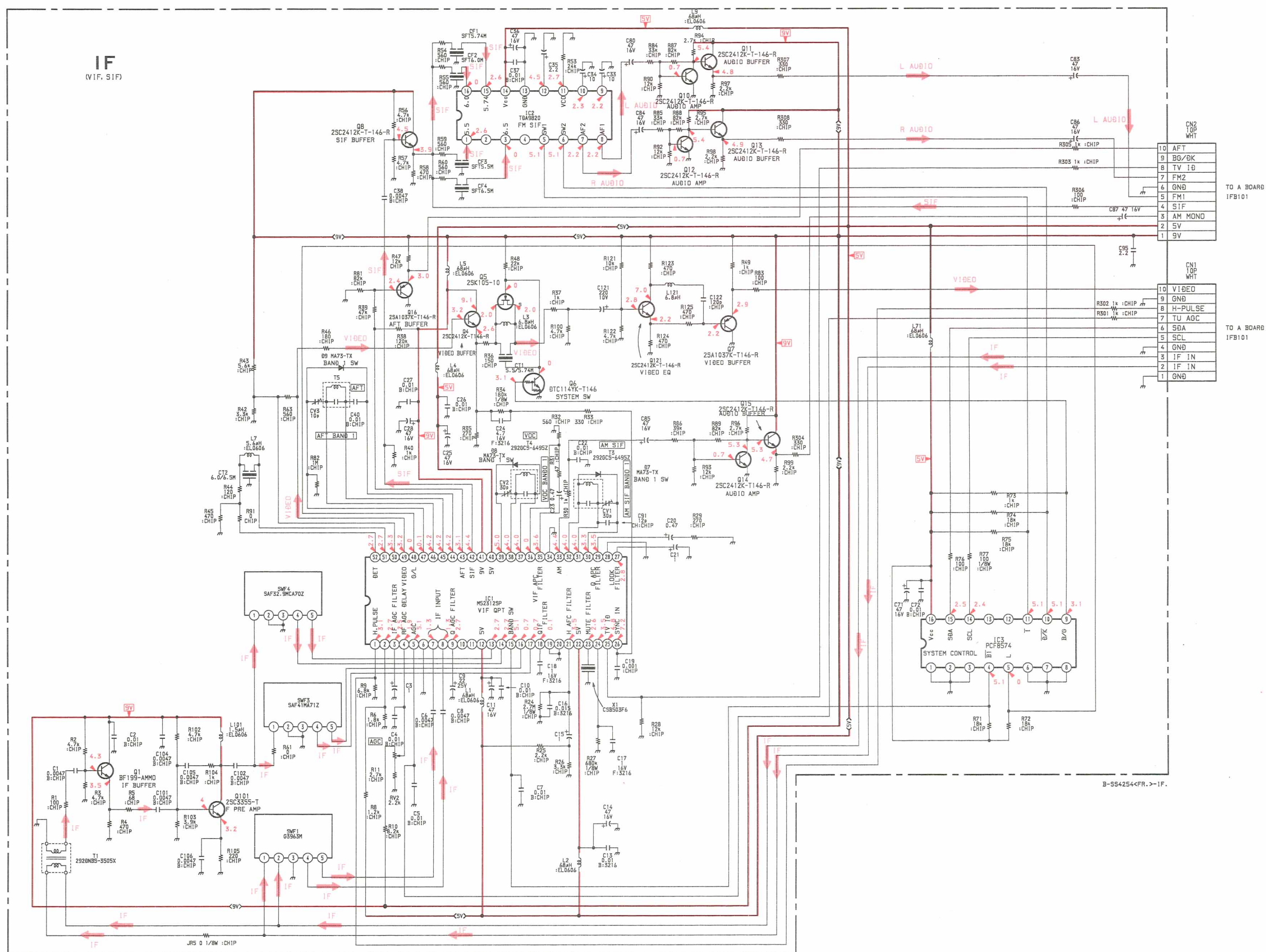
Note :

- : Pattern from the side which enables seeing.
- : Pattern of the rear side.



- VM BOARD -

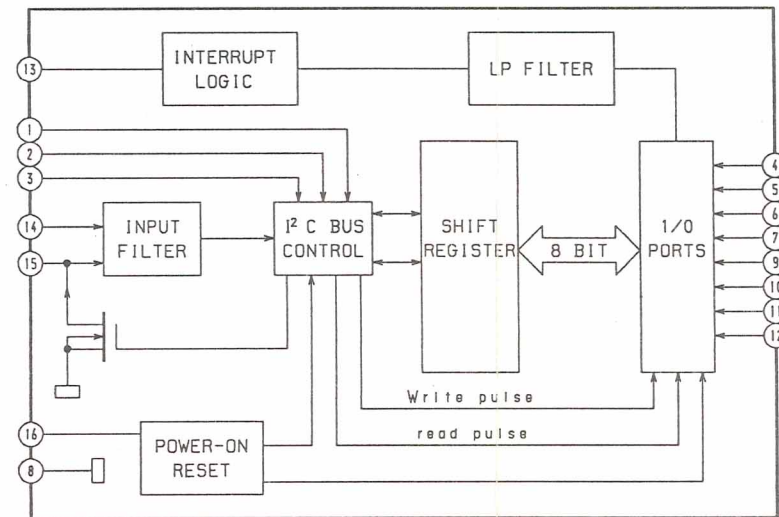




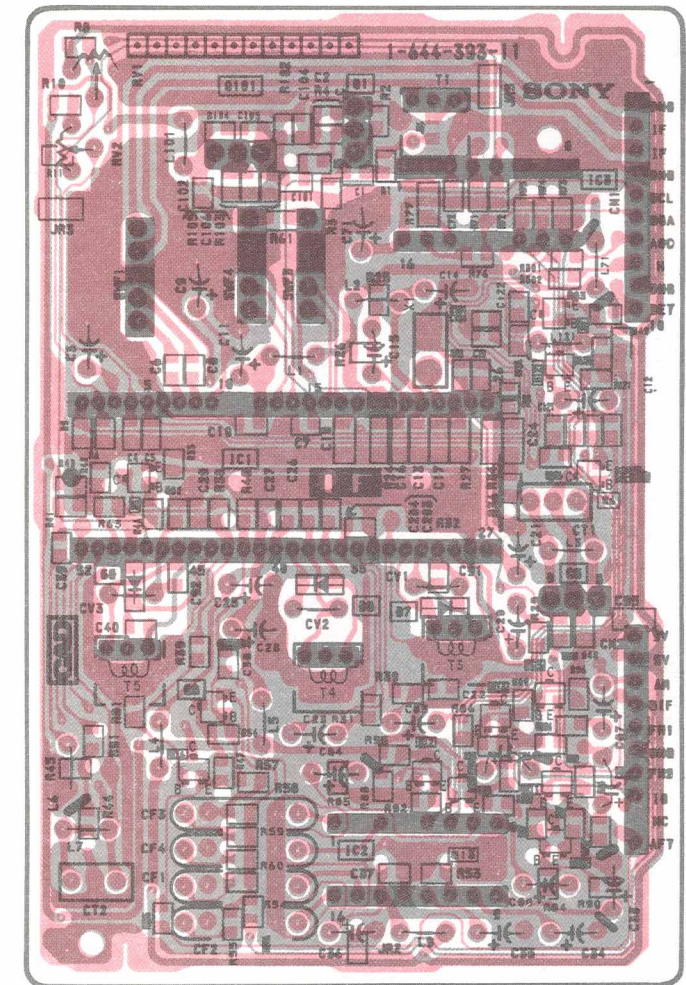
The block diagram illustrates the internal architecture of the 6801 peripheral controller. It features several key components:
 

- INTERRUPT LOGIC**: Connected to pins 13, 1, 2, and 3. It provides control signals to the **I<sup>2</sup> C BUS CONTROL** block.
- LP FILTER**: Connected to pins 14 and 15, and the **I/O PORTS** block.
- INPUT FILTER**: Connected to pins 14 and 15, and the **I<sup>2</sup> C BUS CONTROL** block.
- I<sup>2</sup> C BUS CONTROL**: The central hub for I<sup>2</sup>C communication, receiving signals from the interrupt logic, input filter, and power-on reset. It interfaces with the **SHIFT REGISTER** and **I/O PORTS**.
- SHIFT REGISTER**: An 8-bit register that receives data from the **I<sup>2</sup> C BUS CONTROL** and outputs to the **I/O PORTS**. It is controlled by a **Write pulse** and provides a **read pulse** to the **I/O PORTS**.
- I/O PORTS**: A multi-bit port that interfaces with the external system, receiving data from the shift register and outputting to the LP filter.
- POWER-ON RESET**: Connected to pins 16 and 8, it provides a reset signal to the **I<sup>2</sup> C BUS CONTROL**.





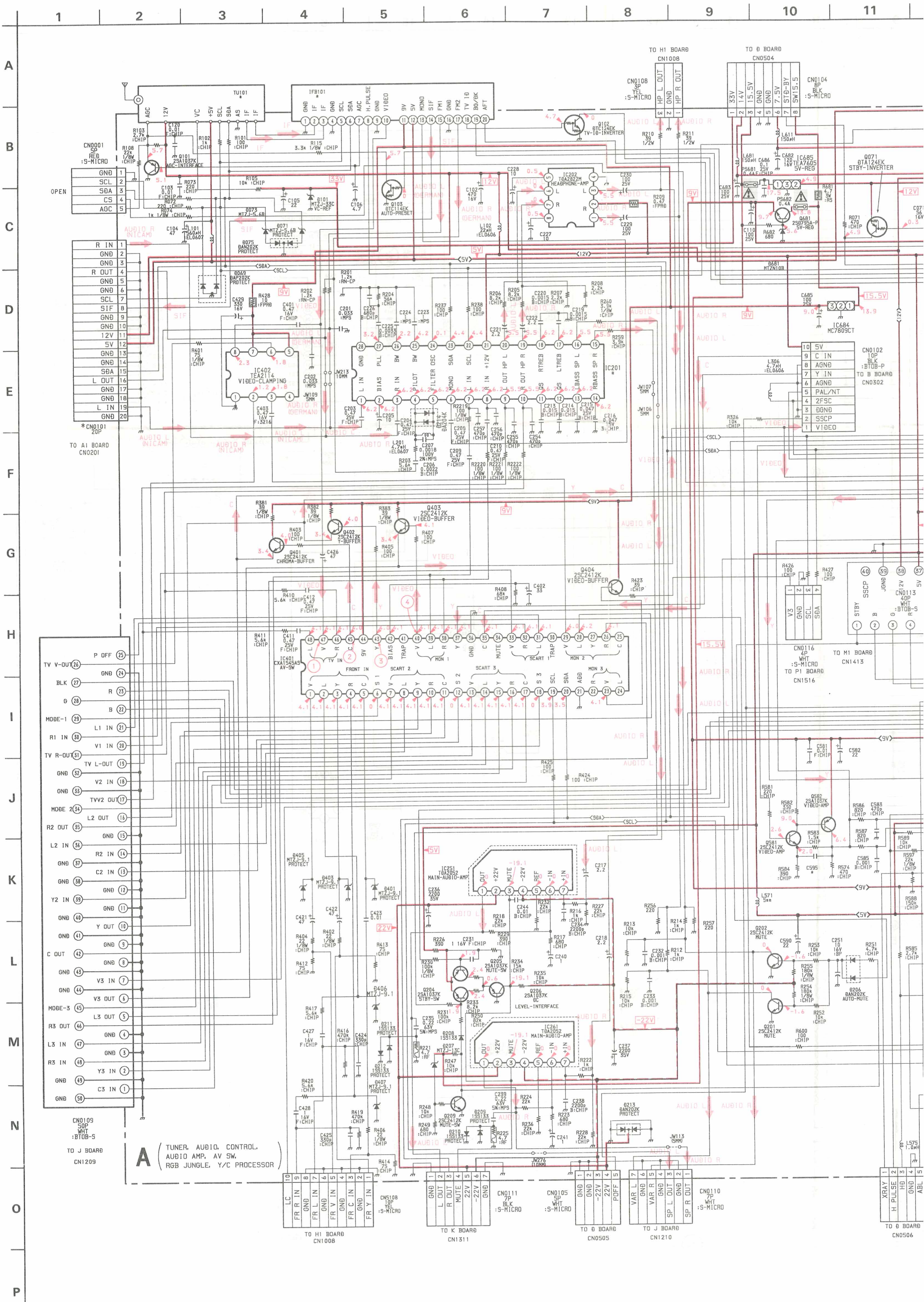
– IF BOARD – (French Model)



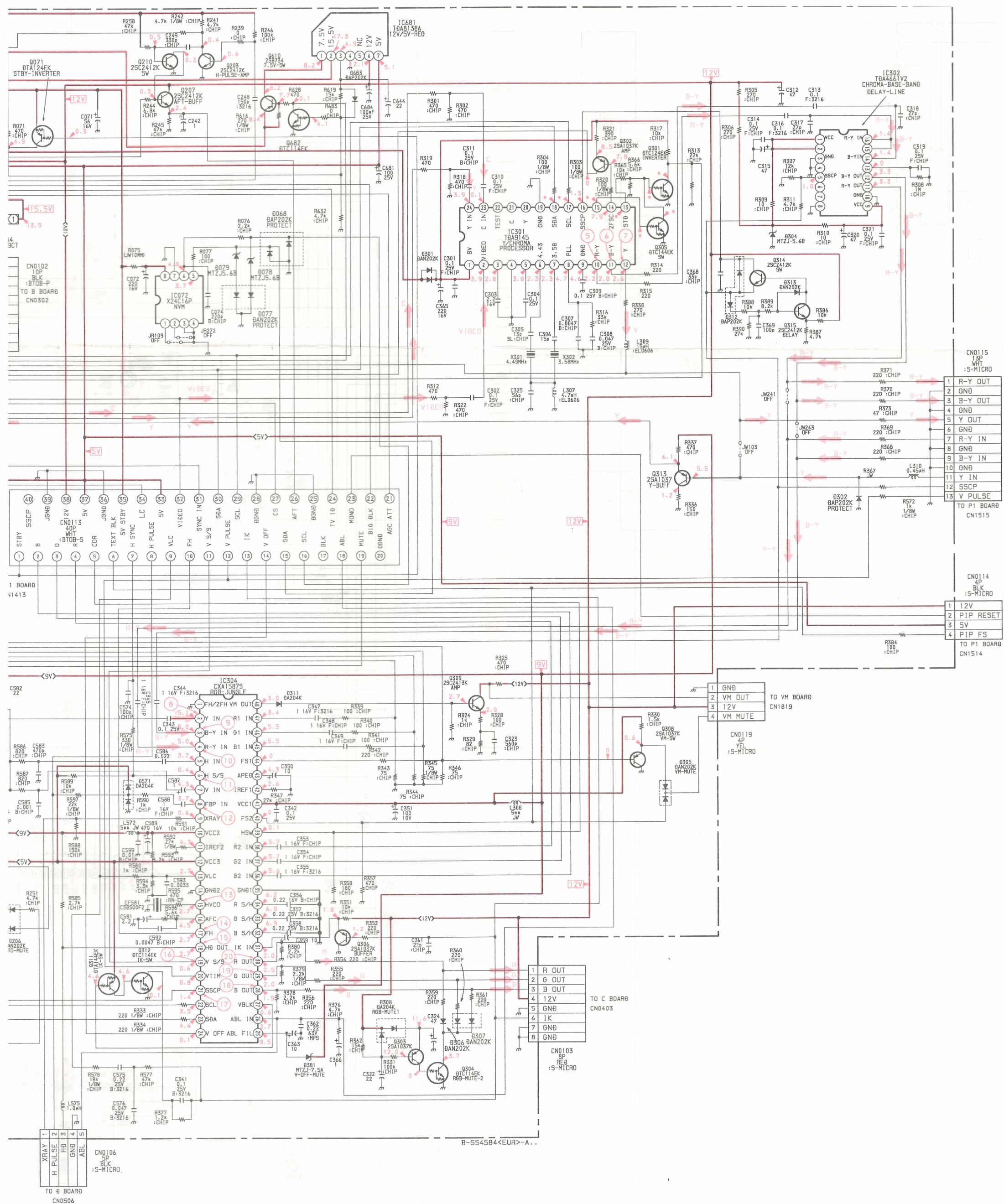
Note :

-  : Pattern from the side which enables seeing.
-  : Pattern of the rear side.











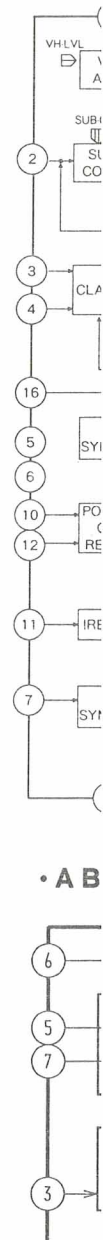


• A B C



## A BOARD

## A BOARD \* MARK

• AB



EFORMS A BOARD

PAL  Vp-p ( H )	① SECAM  1.2 Vp-p ( H )	① NTSC  1.4 Vp-p ( H )	② PAL  1.9 Vp-p ( H )	② SECAM  1.3 Vp-p ( H )
NTSC  Vp-p ( H )	③ PAL  2.3 Vp-p ( H )	③ SECAM  2.2 Vp-p ( H )	③ NTSC  2.7 Vp-p ( H )	④ PAL  2.3 Vp-p ( H )
SECAM  Vp-p ( H )	④ NTSC  2.8 Vp-p ( H )	⑤ PAL  0.6 Vp-p ( H )	⑤ SECAM  1.2 Vp-p ( H )	⑤ NTSC  0.5 Vp-p ( H )
PAL  Vp-p ( H )	⑥ SECAM  1.5 Vp-p ( H )	⑥ NTSC  0.7 Vp-p ( H )	⑦ PAL, SECAM  0.5 Vp-p ( H )	⑦ NTSC  0.6 Vp-p ( H )
PAL  Vp-p ( H )	⑧ SECAM  0.4 Vp-p ( H )	⑧ NTSC  0.6 Vp-p ( H )	⑨ PAL, SECAM  1.5 Vp-p ( H )	⑨ NTSC  1.5 Vp-p ( H )
PAL, SECAM  Vp-p ( H )	⑩ NTSC  1.0 Vp-p ( H )	⑪  5.2 Vp-p ( H )	⑫  6.7 Vp-p ( H )	⑬  0.12 Vp-p(540KHZ)
 Vp-p ( H )	⑮  3.8 Vp-p ( H )	⑯  5.0 Vp-p ( H )	⑰  8.9 Vp-p ( H )	⑱  3.3 Vp-p ( H )
 Vp-p ( H )	⑳  4.1 Vp-p ( H )			

the voltage volue shown by  
mark ✖ on the Schematic  
im, see the another list.

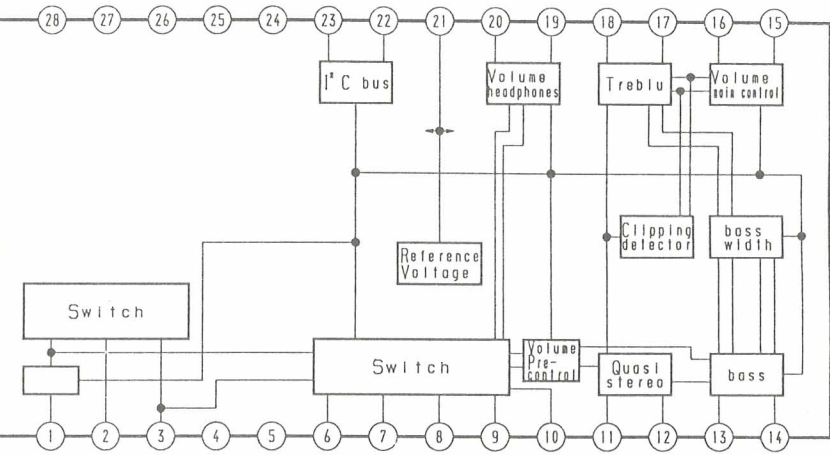
ARD

	PAL	SECAM	NTSC3.58	NTSC4.43
①	0.0	0.0	4.8	4.9
②	0.0	5.0	5.0	0.0
③	4.7	4.2	3.6	4.1
④	4.8	4.4	4.6	4.8
⑤	0.0	0.0	0.0	1.6
⑥	5.5	5.5	5.5	0.1
⑦	0.0	5.5	5.5	0.0
⑧	0.0	0.0	0.0	1.6

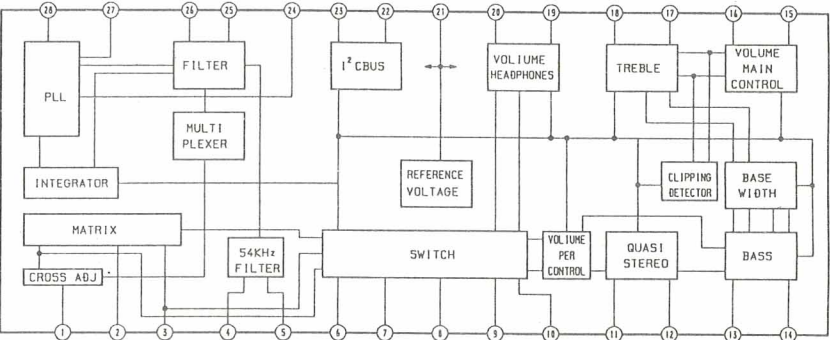
RD \* MARK

del	Italian	French	AEP	Spanish	UK
	-	-	-	47PF/50V	47PF/50V
1	-	-	-	20P	20P
	TDA6612	TDA6612	TDA6612	TDA6612	TDA6622
	IFH-389	IFH-389F	IFH-389	IFH-389	IFH-395
	UV916H	BTP-EC411	UV916H	UV916H	UV944C

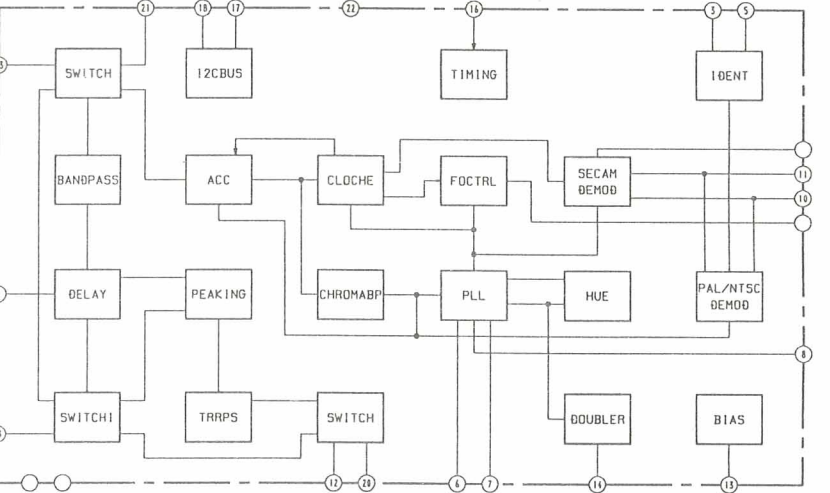
• A BOARD IC201 TDA6622 (UK Model only)



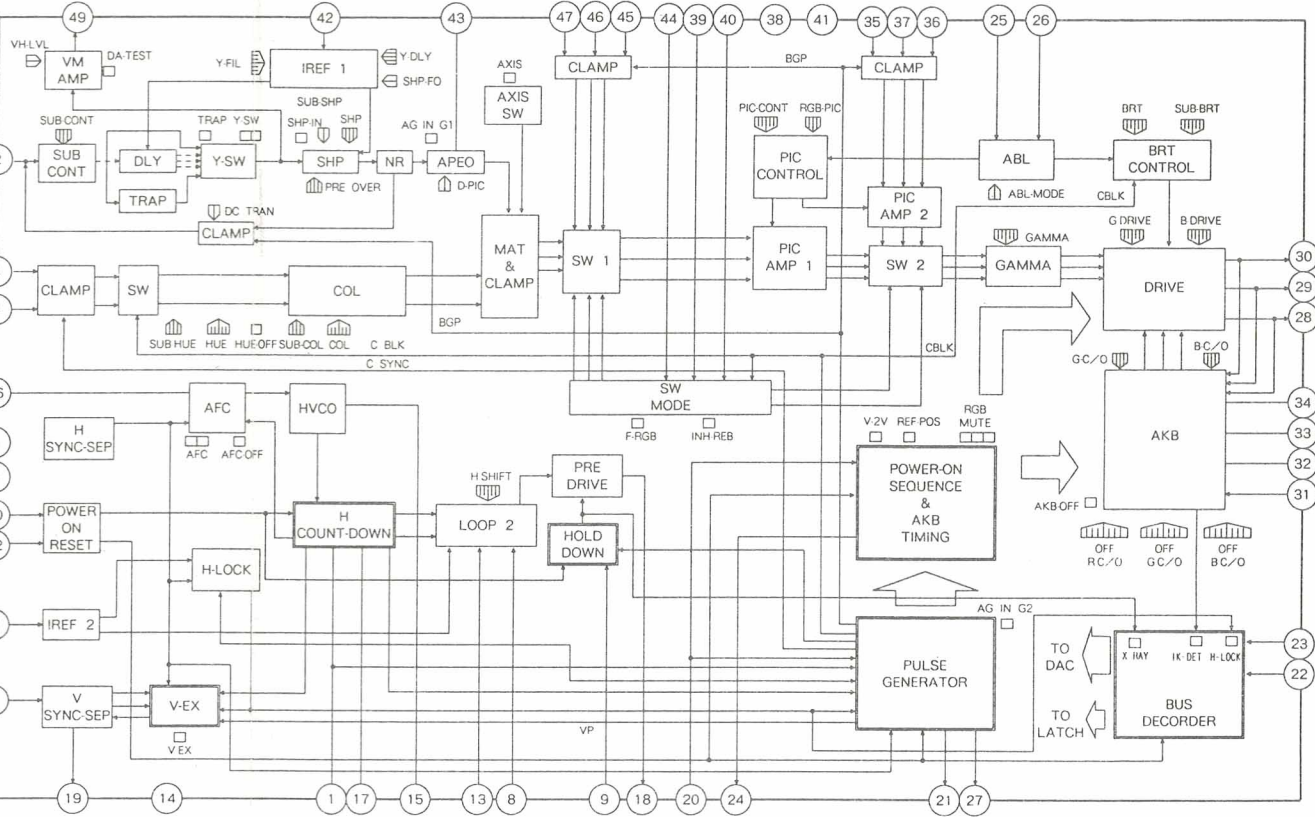
• A BOARD IC201 TDA6612



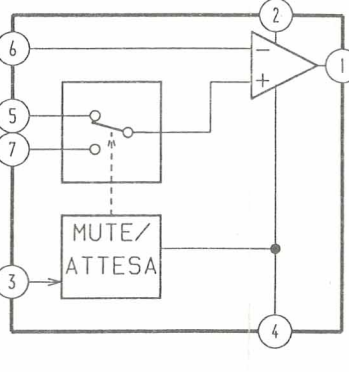
• A BOARD IC301 TDA9145



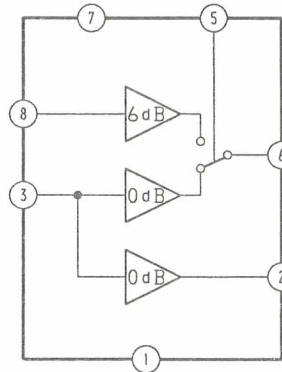
• A BOARD IC304 CXA1587S



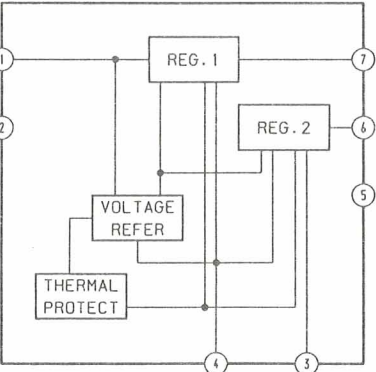
• A BOARD IC251/261 TDA2052



• A BOARD IC402 TEA2114



• A BOARD IC681 TDA8134A

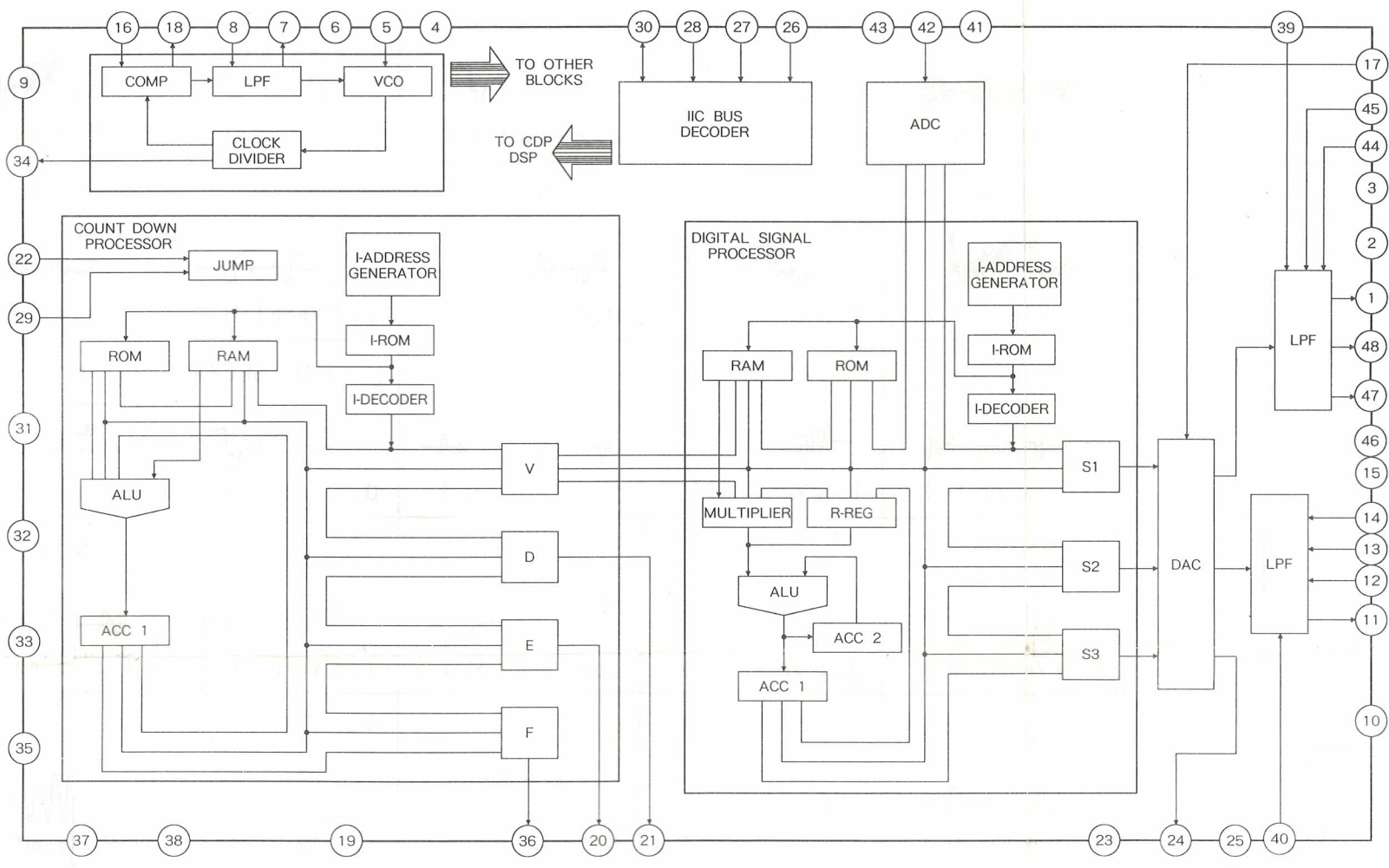


Schematic diagrams

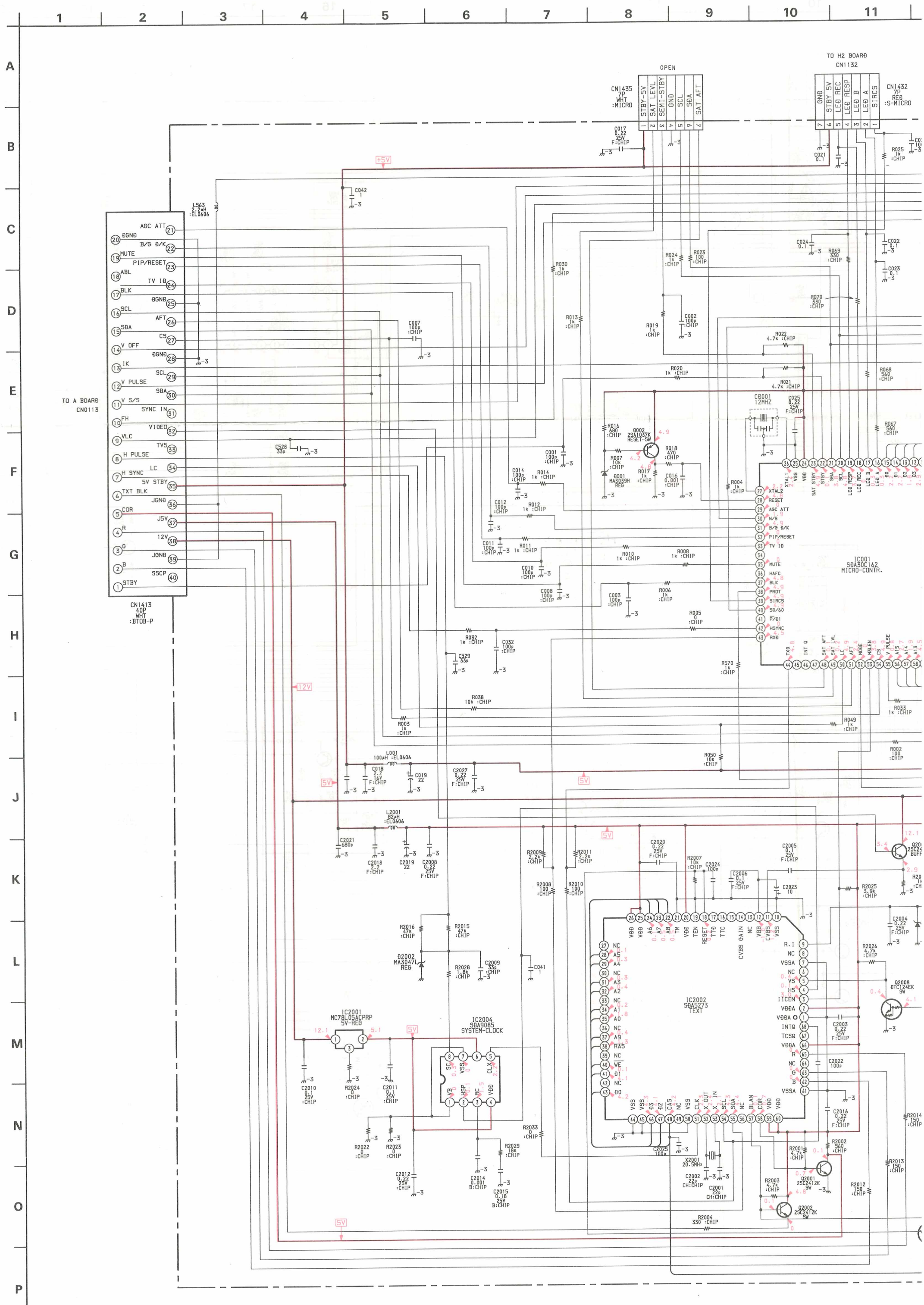
Schematic diagrams



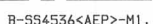
• M1 BOARD IC561 CXD2018Q



A  
B  
C  
D  
E  
F  
G  
H  
I  
J  
K  
L  
M  
N  
O  
P





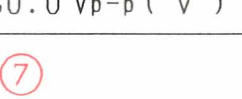
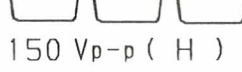


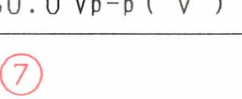
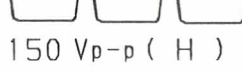





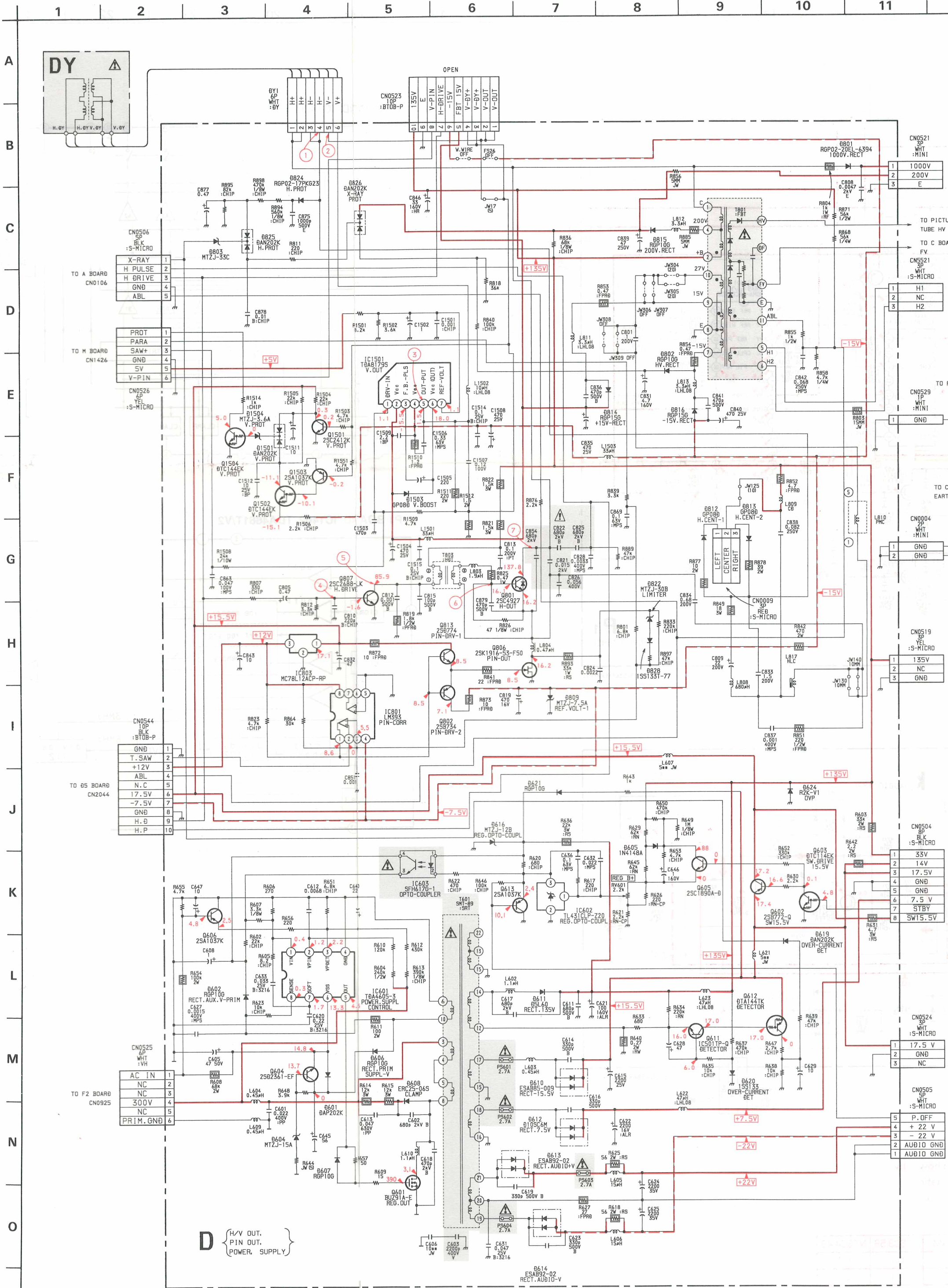


[H/V OUT, PIN OUT,  
POWER SUPPLY]

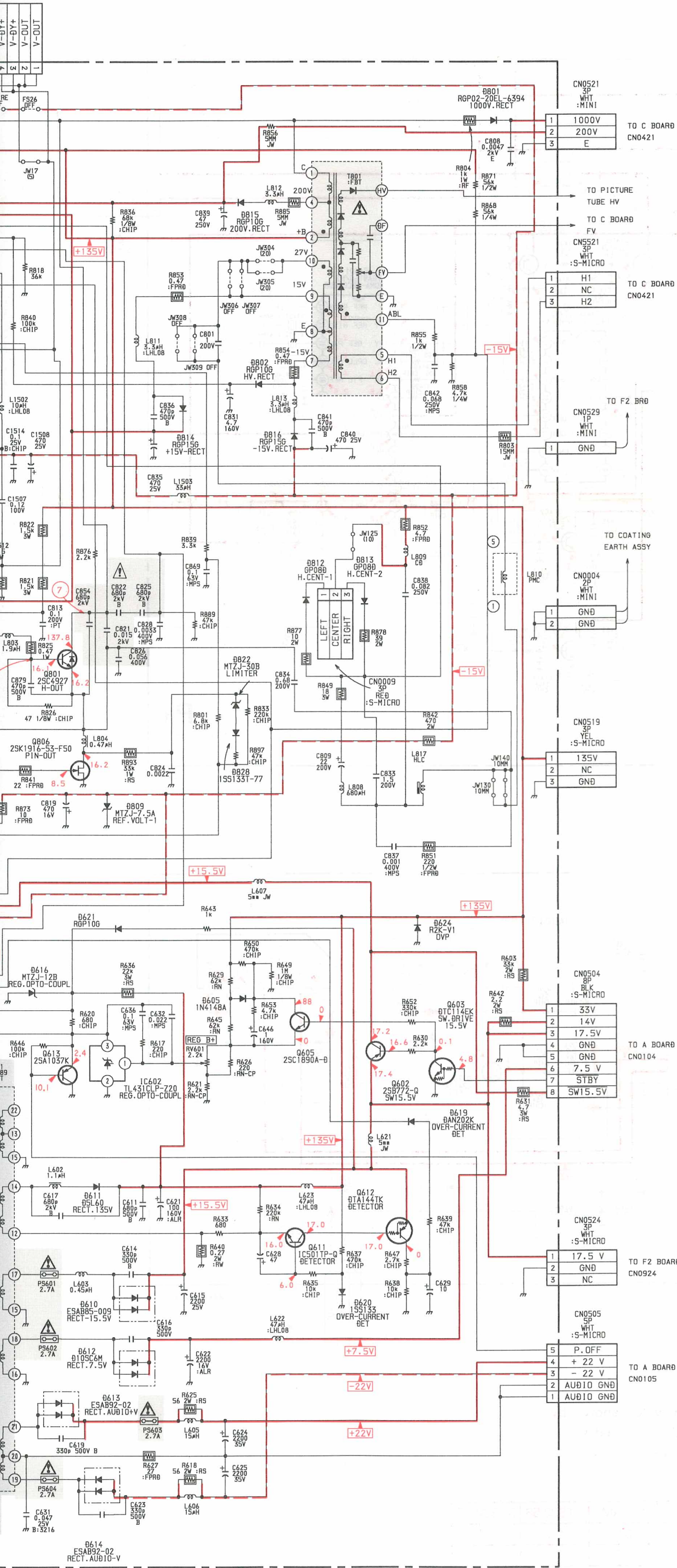
D001	G - 2
D2001	I - 5
D2002	J - 5
D2003	I - 6

<p>①</p>  <p>220 V<sub>p-p</sub> ( H )</p>	<p>②</p>  <p>2.8 V<sub>p-p</sub> ( V )</p>	<p>③</p>  <p>0.5 V<sub>p-p</sub> ( V )</p>
<p>④</p>  <p>60.0 V<sub>p-p</sub> ( V )</p>	<p>⑤</p>  <p>3.0 V<sub>p-p</sub> ( H )</p>	<p>⑥</p>  <p>175 V<sub>p-p</sub> ( H )</p>
<p>⑦</p>  <p>150 V<sub>p-p</sub> ( H )</p>	<p>⑧</p>  <p>950 V<sub>p-p</sub> ( H )</p>	<p>⑨</p>  <p>19.0 V<sub>p-p</sub> ( H )</p>

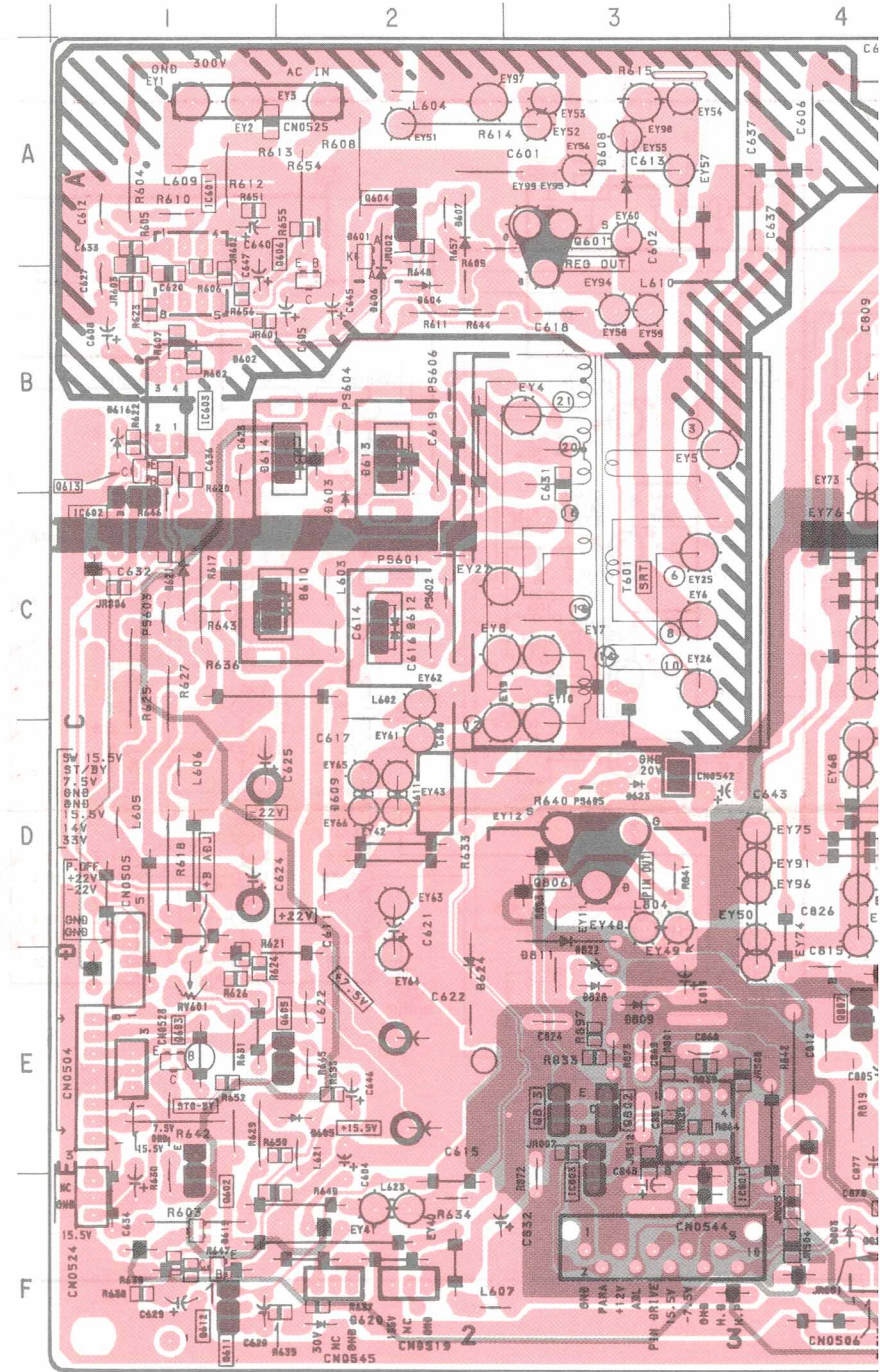






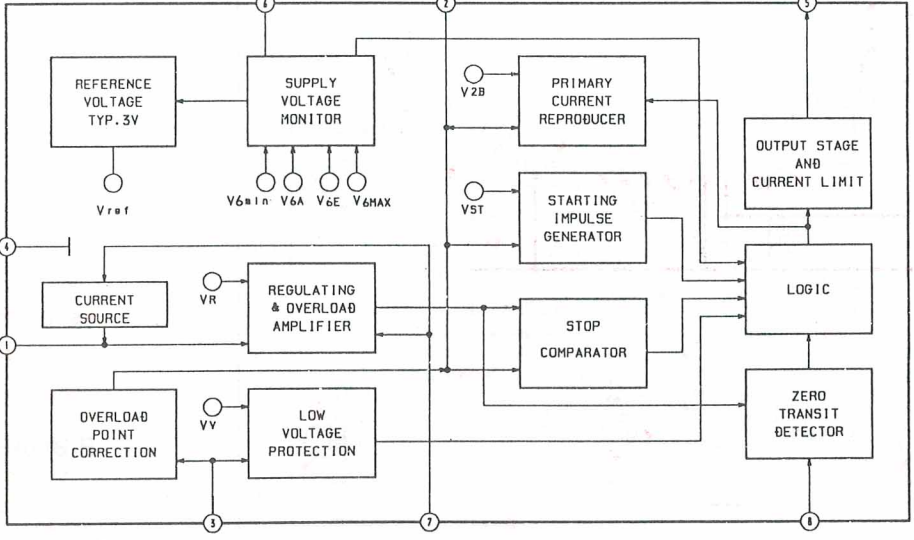


- D BOARD -



**NOTE:**  
The circuit indicated as left contains high voltage of 600 Vp-p. Care must be paid to prevent an electric shock inspection or repairing.

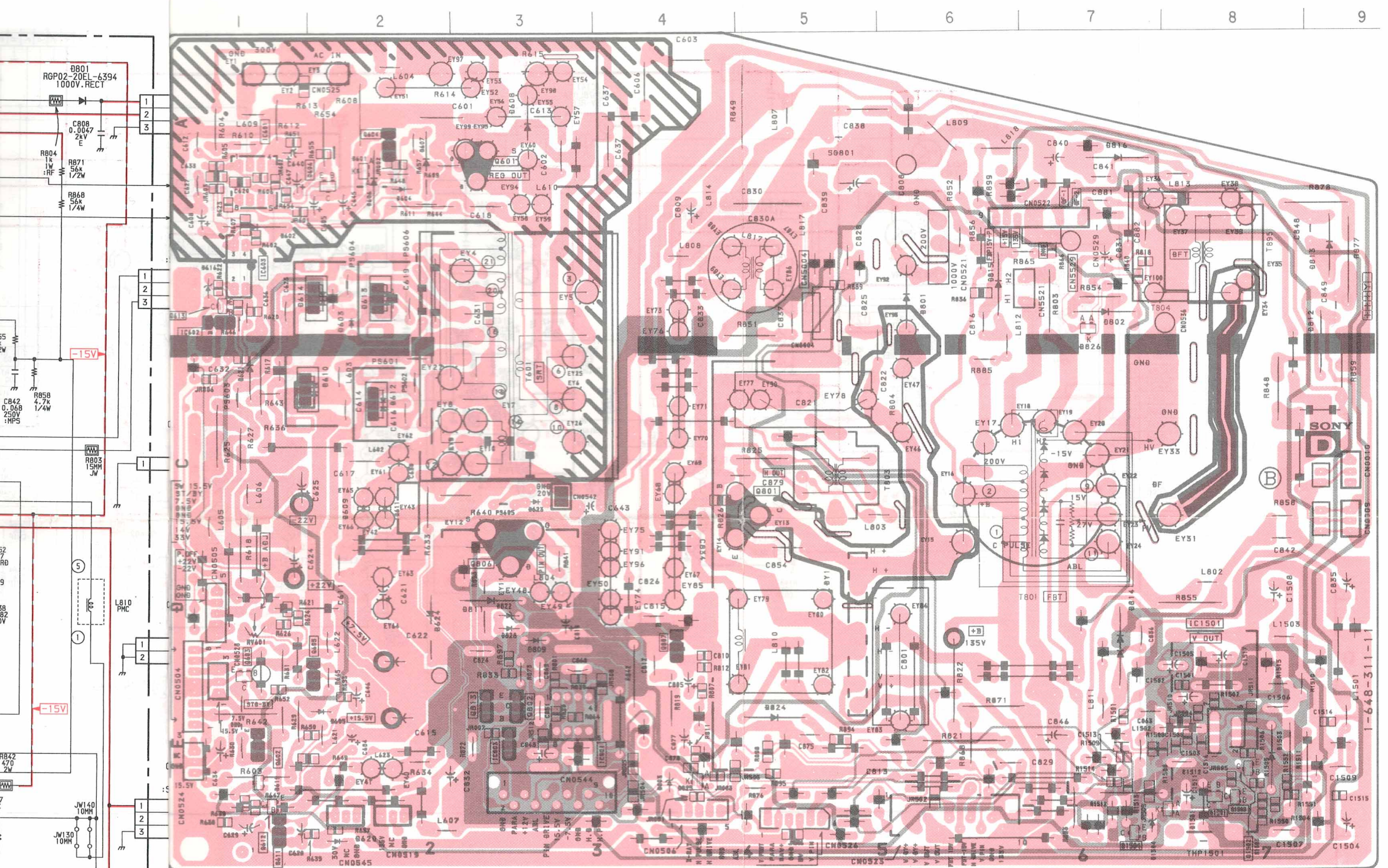
• D BOARD IC601 TDA4605-3



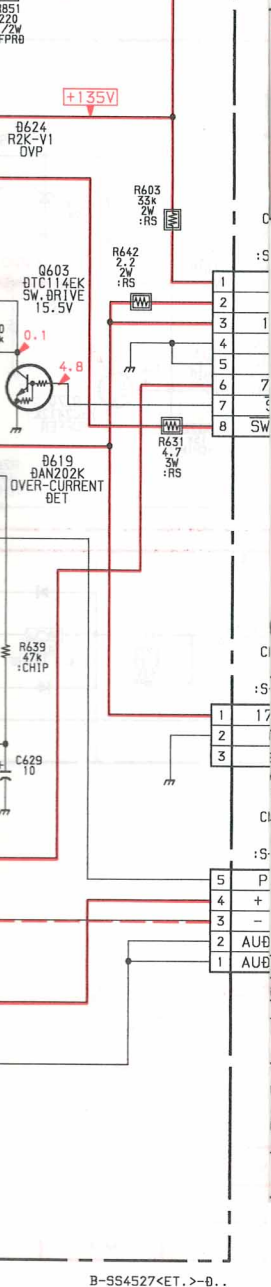


D BOARD

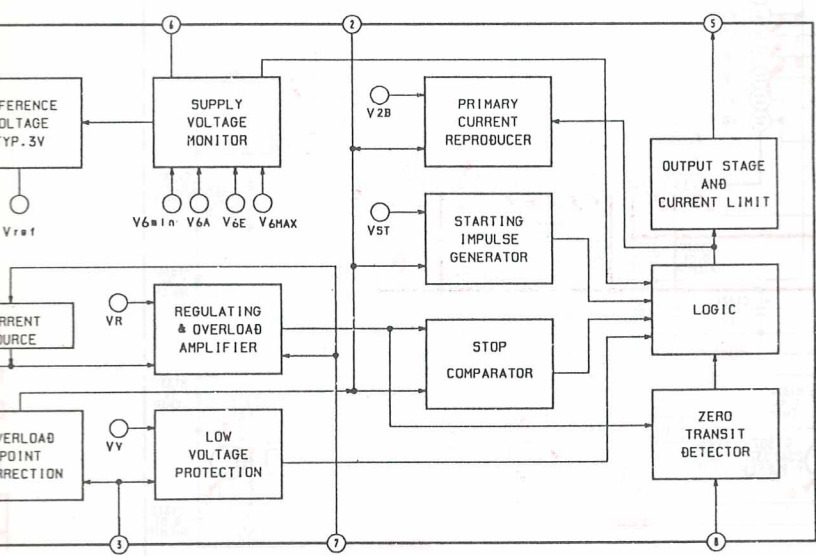
Note :  
• : Pattern from the side which enables seeing  
• : Pattern of the rear side.



**NOTE:**  
The circuit indicated as left contains high voltage of over 600 Vp-p. Care must be paid to prevent an electric shock in inspection or repairing.



ARD IC601 TDA4605-3



IC		D607	A - 2
		D608	A - 3
IC601	A - 1	D610	C - 2
IC602	C - 1	D611	D - 2
IC603	B - 1	D612	C - 2
IC801	E - 3	D613	B - 2
IC803	F - 3	D614	B - 2
IC1501	E - 8	D616	B - 1
		D619	F - 1
		D620	F - 2
		D621	C - 1
		D624	E - 2
TRANSISTOR		D801	B - 6
Q601	A - 3	D802	B - 7
Q602	F - 1	D803	F - 4
Q603	E - 1	D809	E - 3
Q604	A - 2	D811	D - 3
Q605	E - 2	D812	C - 9
Q606	B - 2	D813	B - 9
Q611	F - 1	D814	E - 7
Q612	F - 1	D815	B - 6
Q613	B - 1	D816	A - 7
Q801	D - 5	D822	E - 3
Q802	E - 3	D824	E - 5
Q806	D - 3	D825	F - 4
Q807	E - 4	D826	C - 7
Q813	E - 3	D828	E - 3
Q1501	F - 8	D1501	F - 8
Q1502	F - 8	D1503	F - 8
Q1503	F - 8	D1504	F - 7
Q1504	F - 7		
DIODE		VARIABLE RESISTOR	
D601	A - 2	RV601	E - 1
D602	B - 1		
D604	B - 2		
D605	E - 2		
D606	B - 2		

Schematic diagram

Schematic diagrams

boards

D5

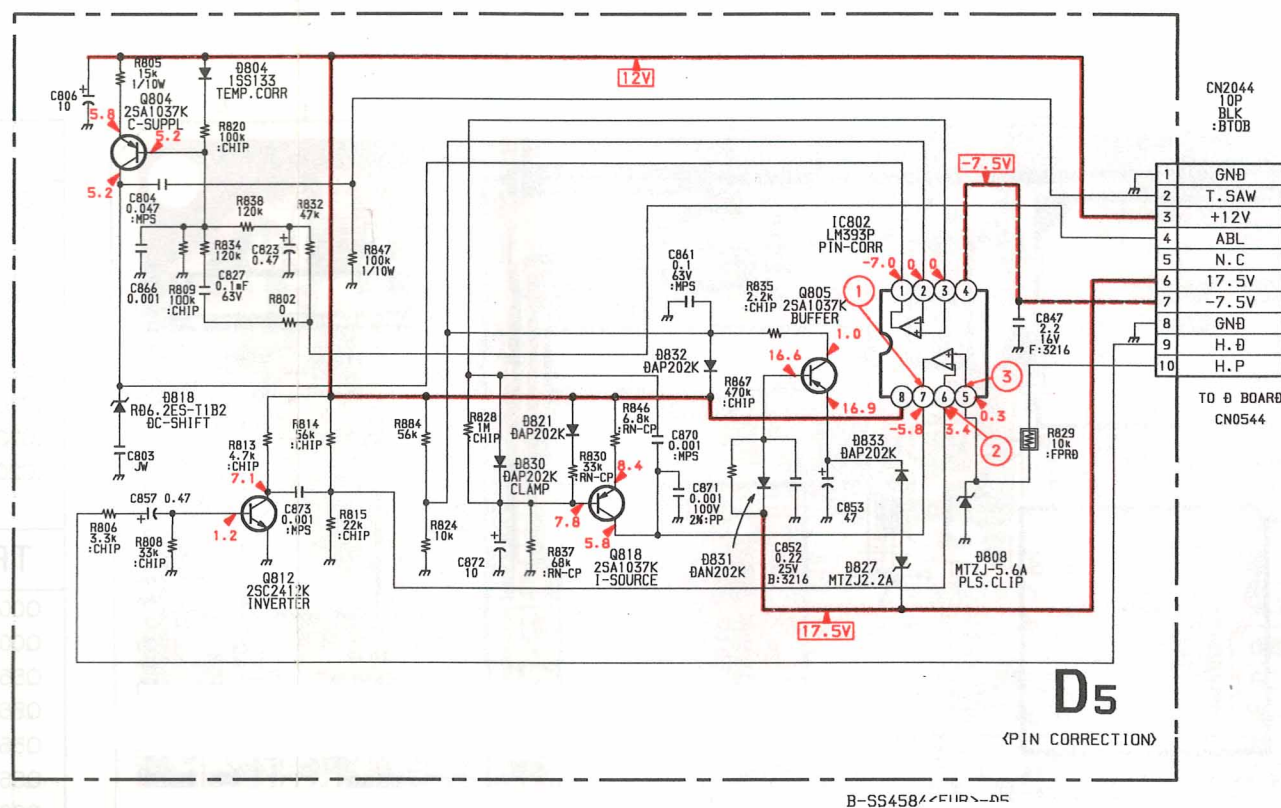
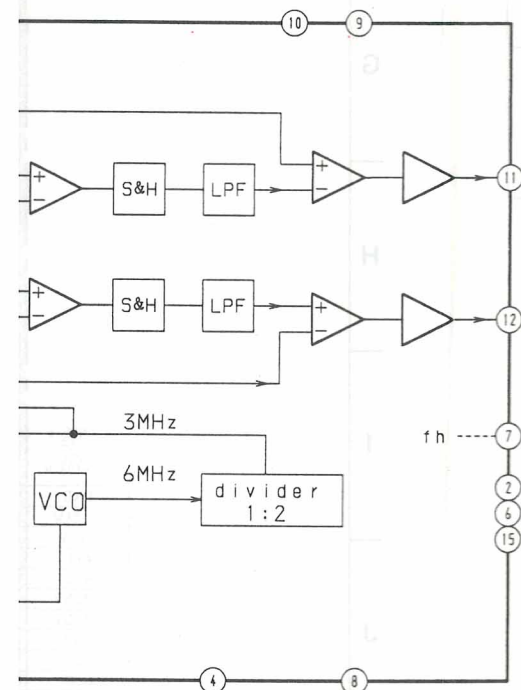
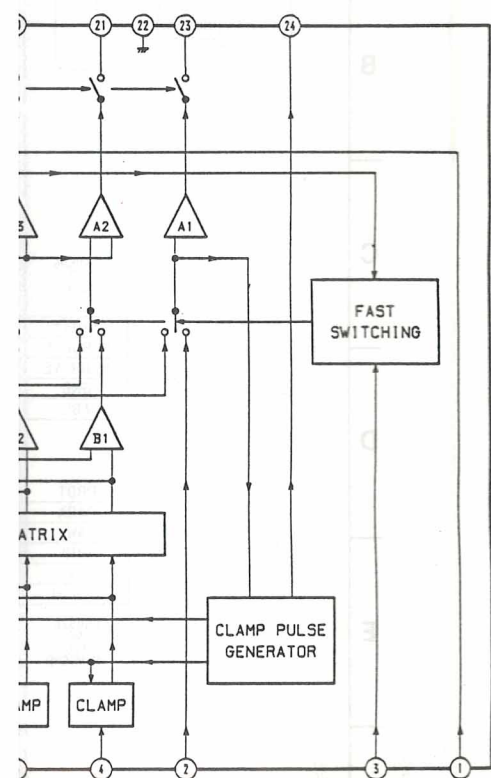
P1 boards



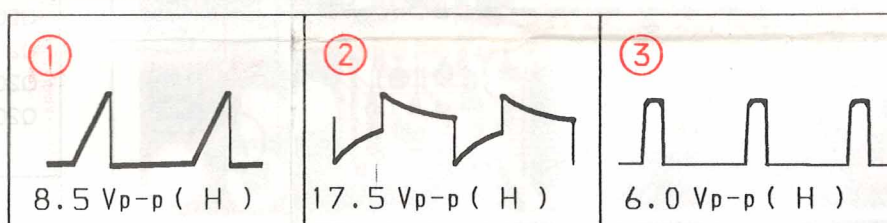




	PAL	SECAM	NTSC3.58	NTSC4.43
69	5.5	5.5	0.1	0.1
70	5.5	5.5	0.1	0.1

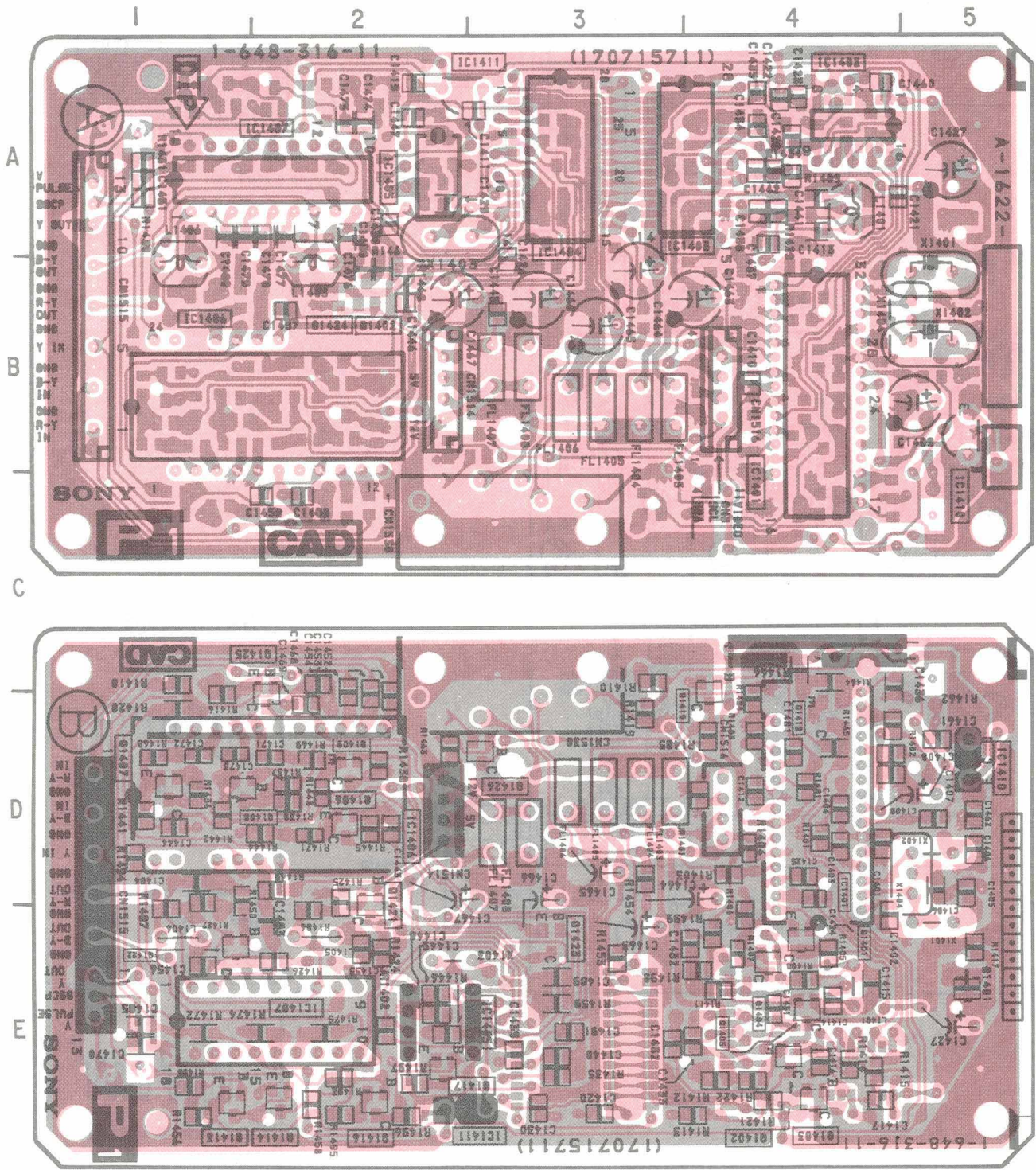


### • WAVEFORMS D5 BOARD





- P1 BOARD -

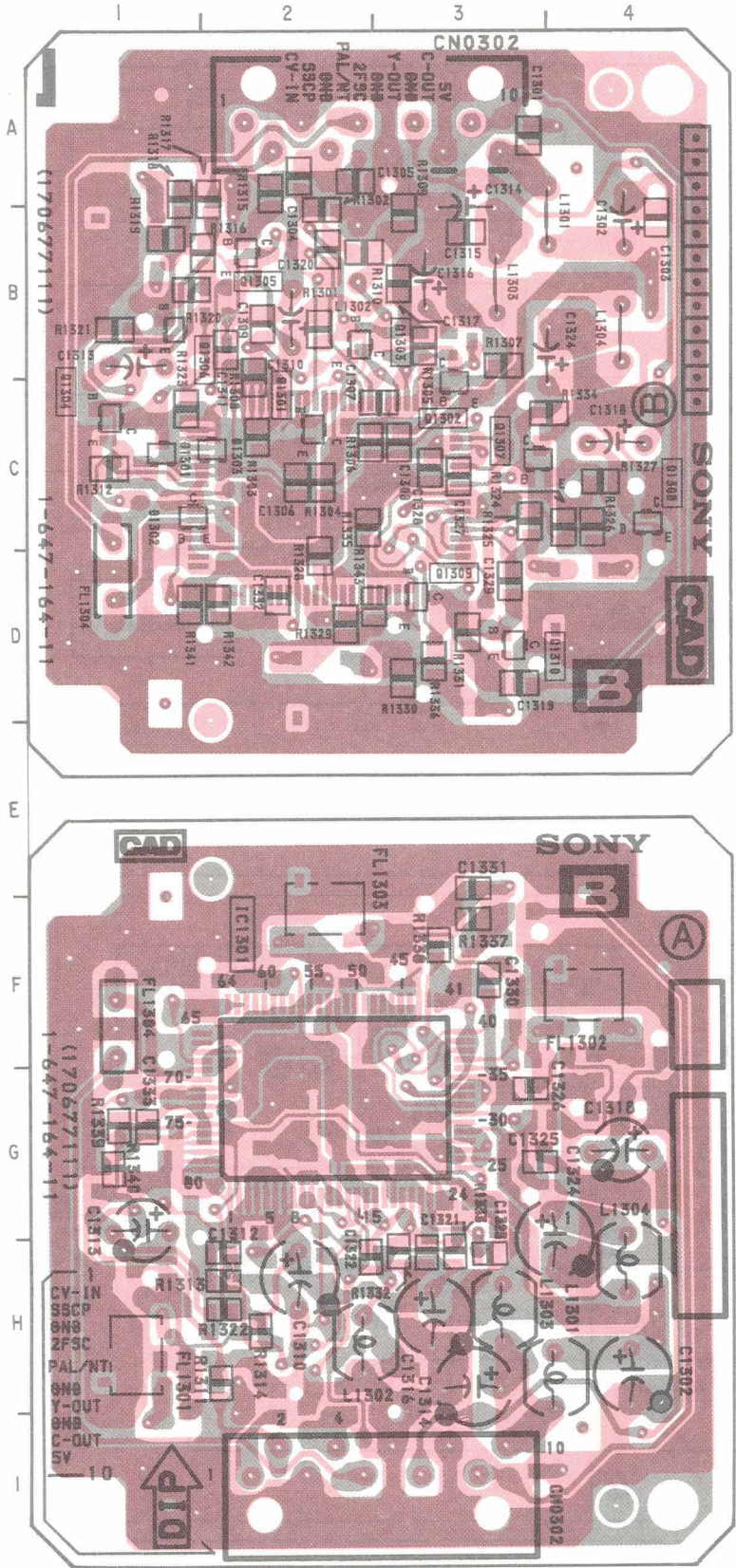


Note :

- : Pattern from the side which enables seeing.
- : Pattern of the rear side.

IC	
IC1401	B - 4, D - 4
IC1402	A - 4
IC1403	A - 3
IC1404	A - 3
IC1405	A - 2, E - 2
IC1406	B - 1, D - 2
IC1410	B - 5, D - 5
IC1411	A - 2, E - 2
TRANSISTOR	
Q1401	E - 4
Q1402	E - 4
Q1403	E - 4
Q1404	E - 4
Q1405	E - 4
Q1406	D - 2
Q1407	D - 1
Q1408	D - 1
Q1409	D - 2
Q1413	E - 1
Q1414	E - 2
Q1416	E - 2
Q1417	E - 2
Q1419	D - 4
Q1421	E - 2
Q1422	E - 1
Q1425	D - 2
Q1426	D - 3
DIODE	
D1401	E - 5

- B BOARD -



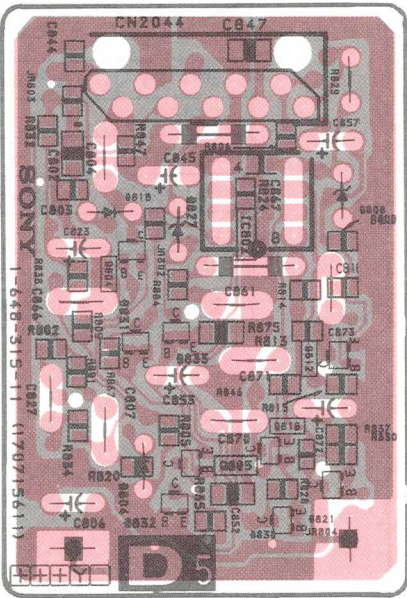
IC	
IC1301	G - 2
TRANSISTOR	
Q1301	C - 2
Q1302	B - 3
Q1303	B - 2
Q1304	C - 1
Q1305	B - 2
Q1306	B - 1
Q1307	C - 3
Q1308	C - 4
Q1310	D - 3
DIODE	
D1301	C - 1



Note :

- : Pattern from the side which enables seeing.
- : Pattern of the rear side.

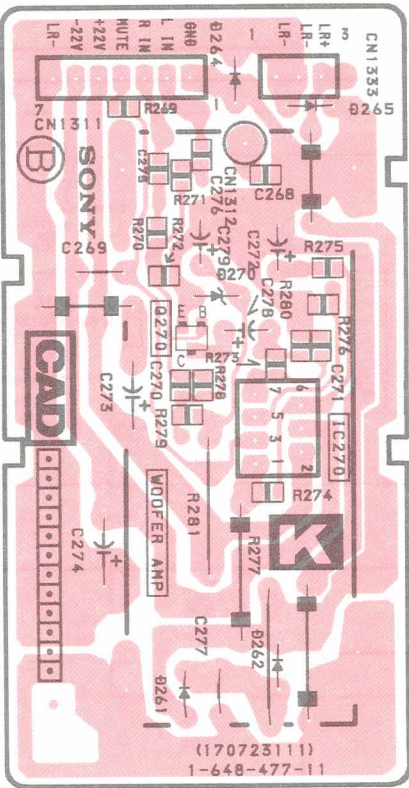


- D5 BOARD -



- Note :
-  : Pattern from the side which enables seeing.
  -  : Pattern of the rear side.

- K BOARD -



A  
B  
C  
D  
E  
F  
G  
H  
I  
J



1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	1
---	---	---	---	---	---	---	---	---	----	----	----	----	----	----	---

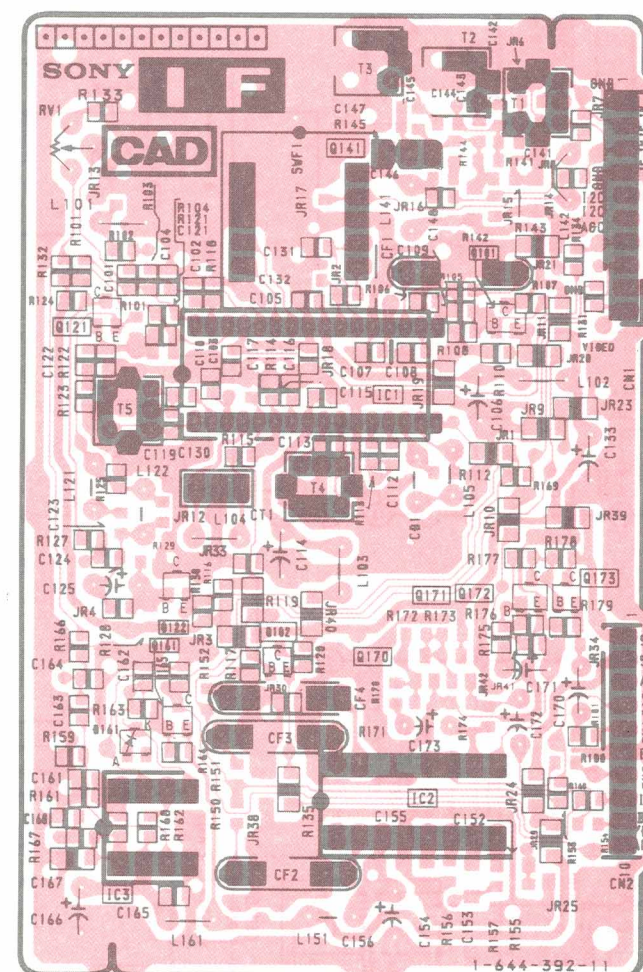
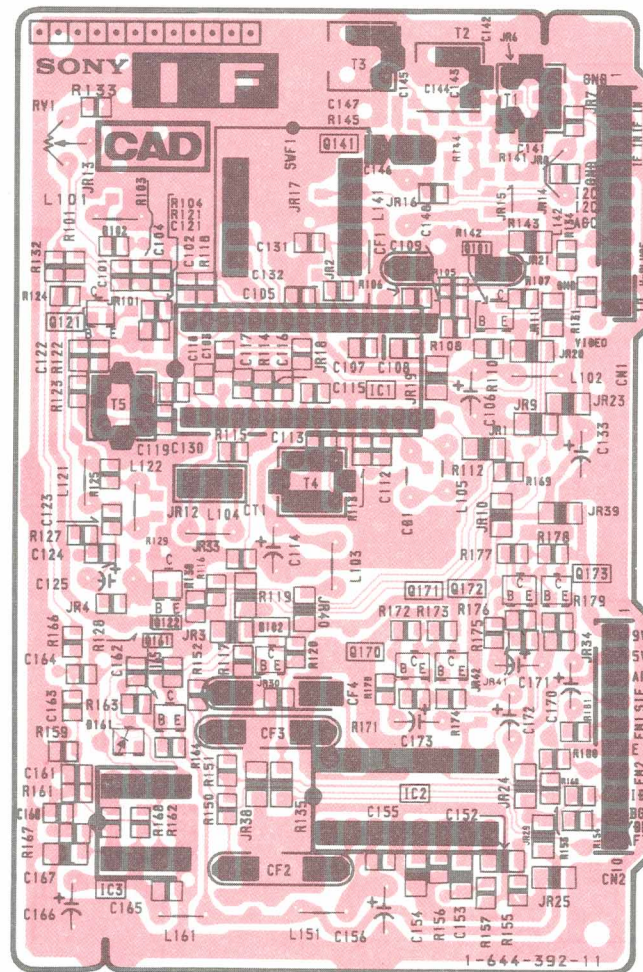
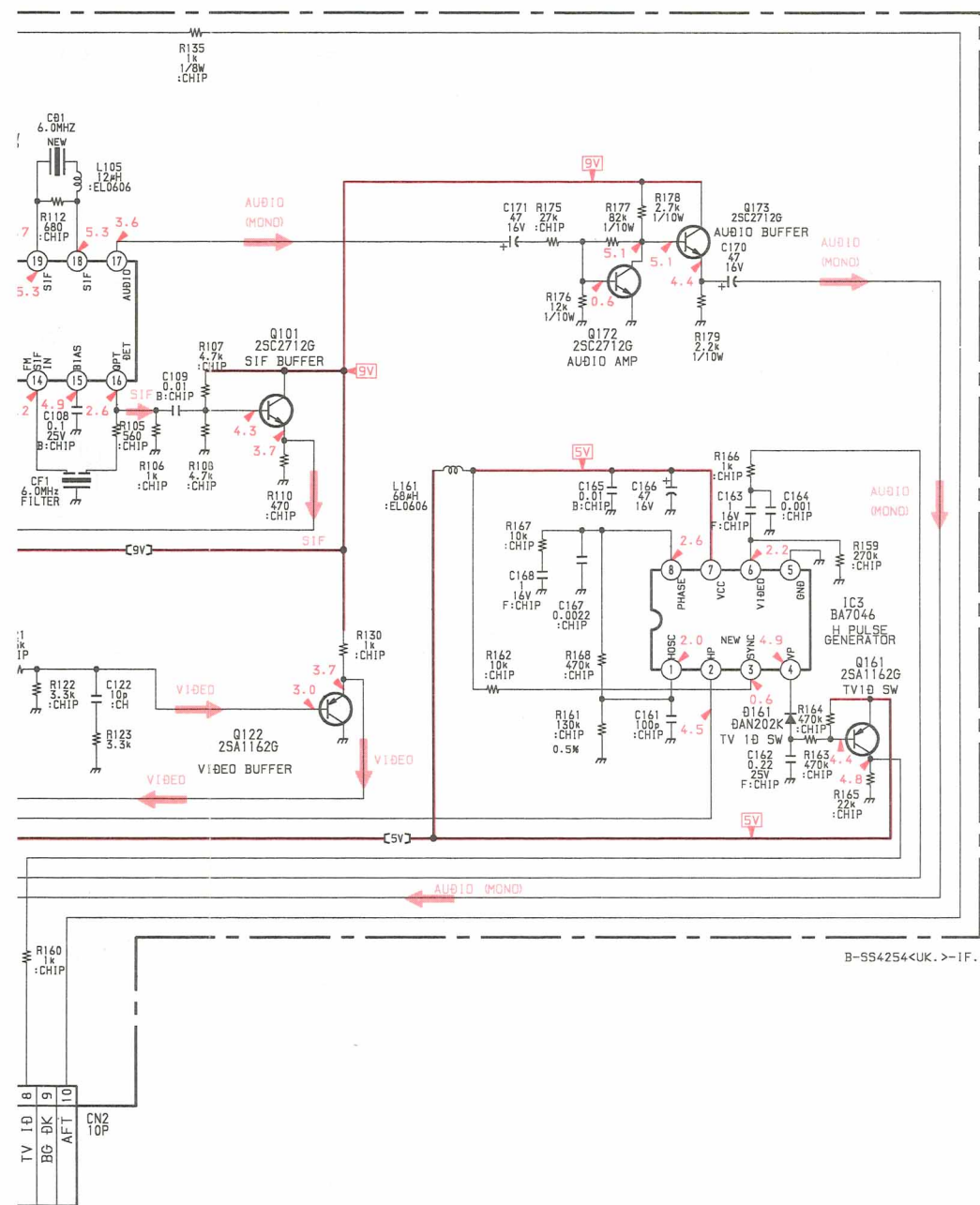


IF

[VIF, SIF]

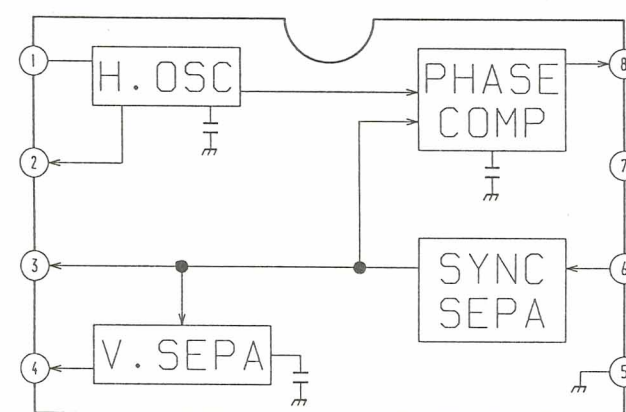
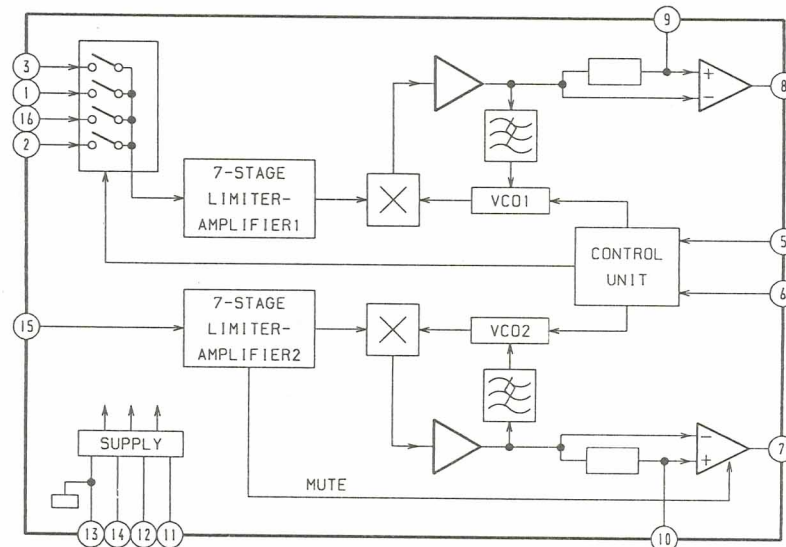
- IF BOARD - (AEP, Italian, Spanish Model)

- IF BOARD - (UK Model)



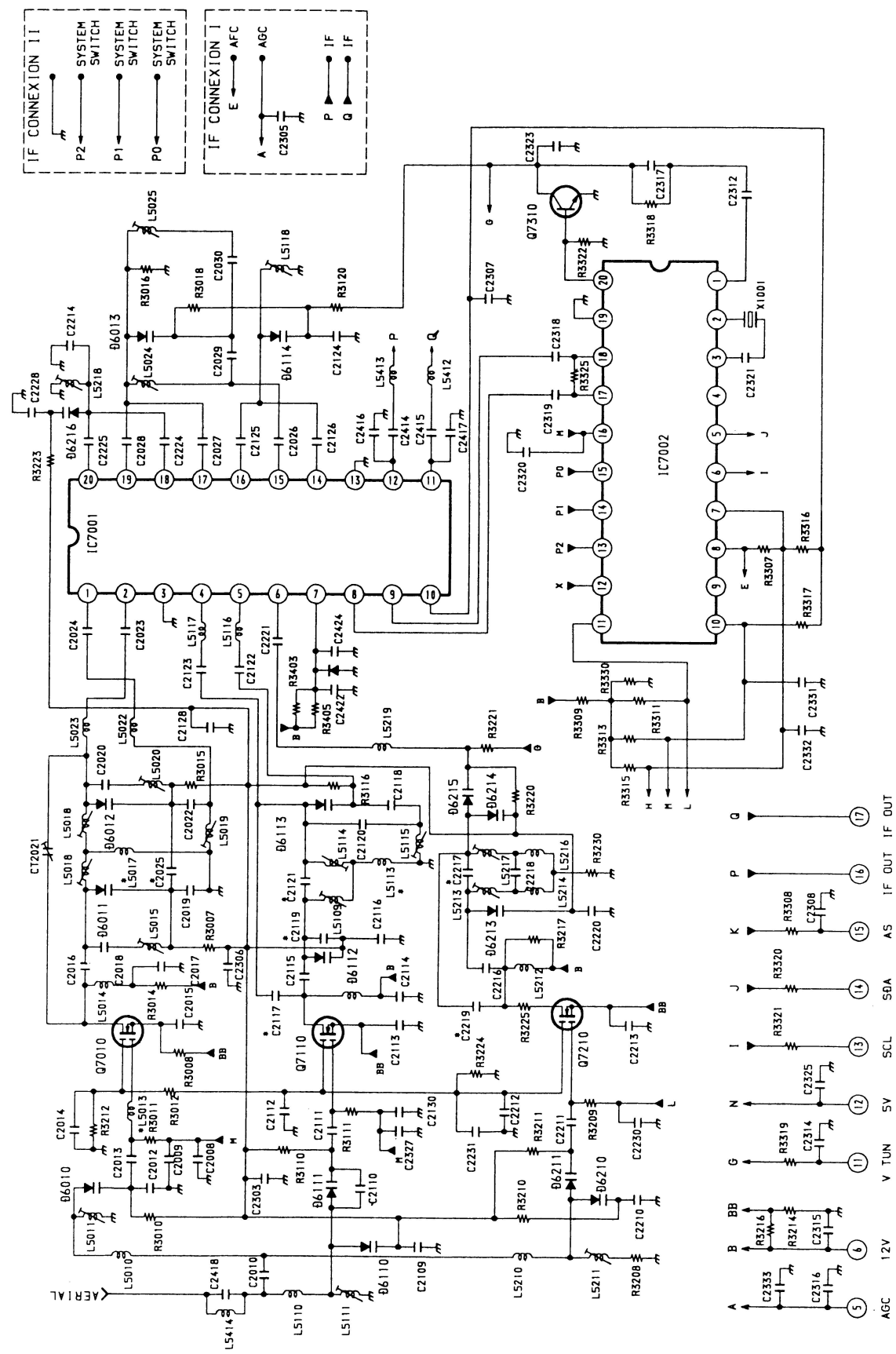
• IF BOARD IC2 TDA9820 (AEP, Italian, Spanish Model)

• IF BOARD IC3 BA7046 (AEP, Italian, Spanish Model)

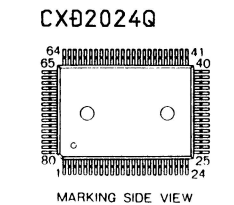
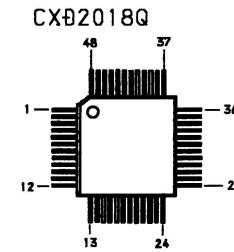
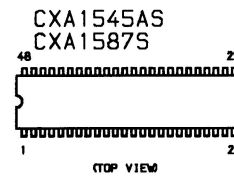




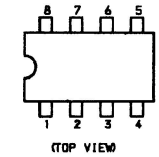
5-4. SCHEMATIC DIAGRAM OF TUNER  
A BOARD TU101 UV916H



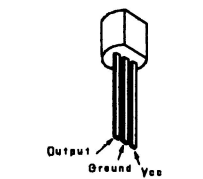
## 5-5. SEMICONDUCTORS



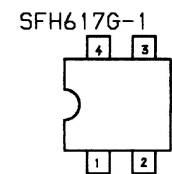
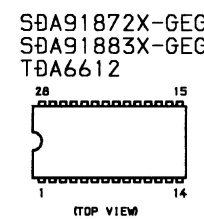
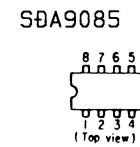
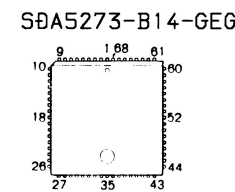
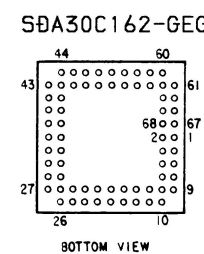
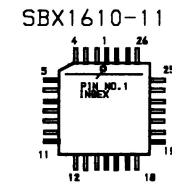
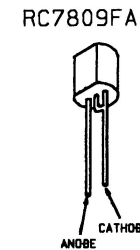
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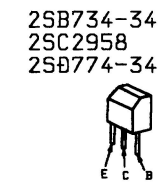
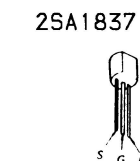
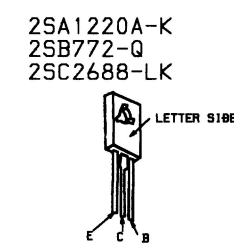
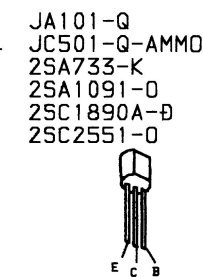
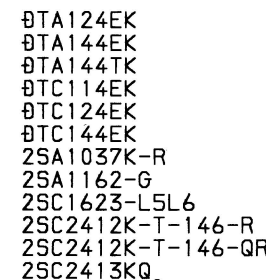
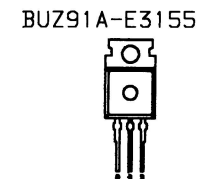
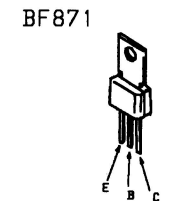
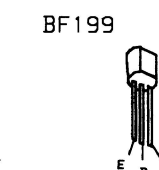
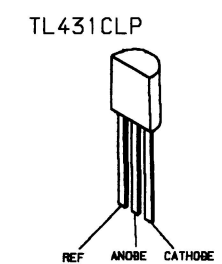
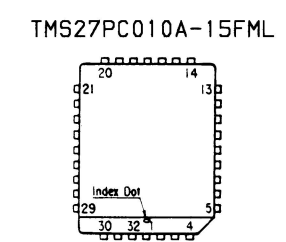
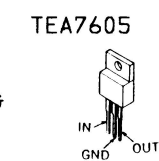
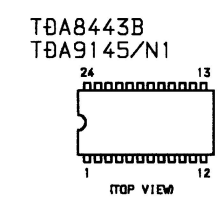
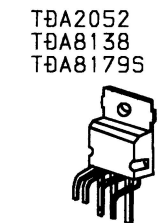
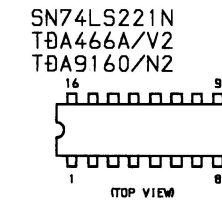
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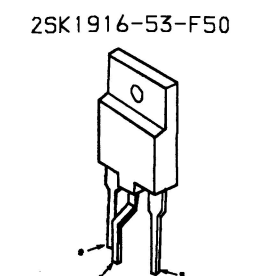
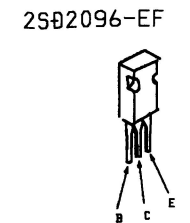
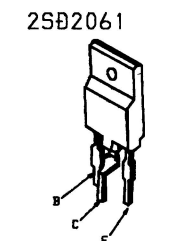
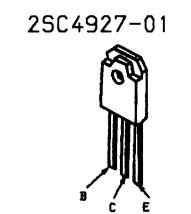
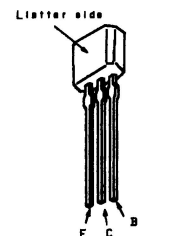
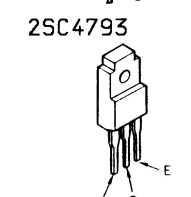
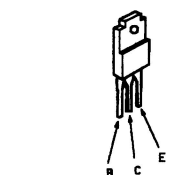
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NJM78M09FA



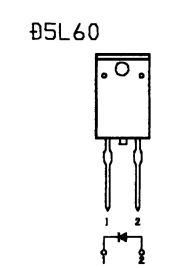
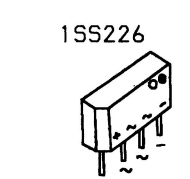
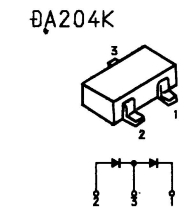
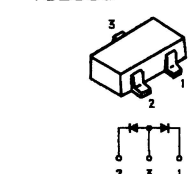
1. VCC  
2. NC  
3. Vout  
4. GND



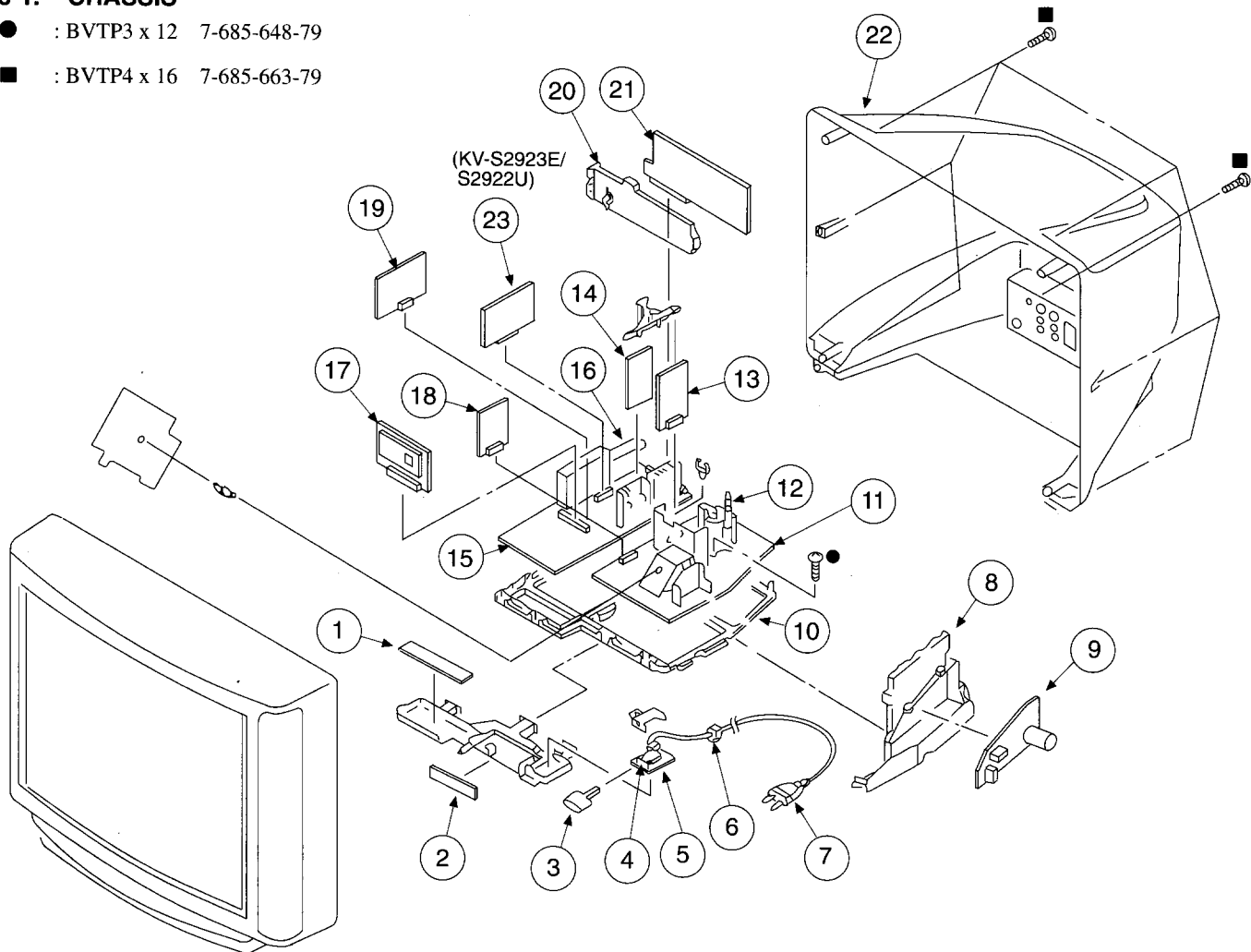
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ØAN202K  
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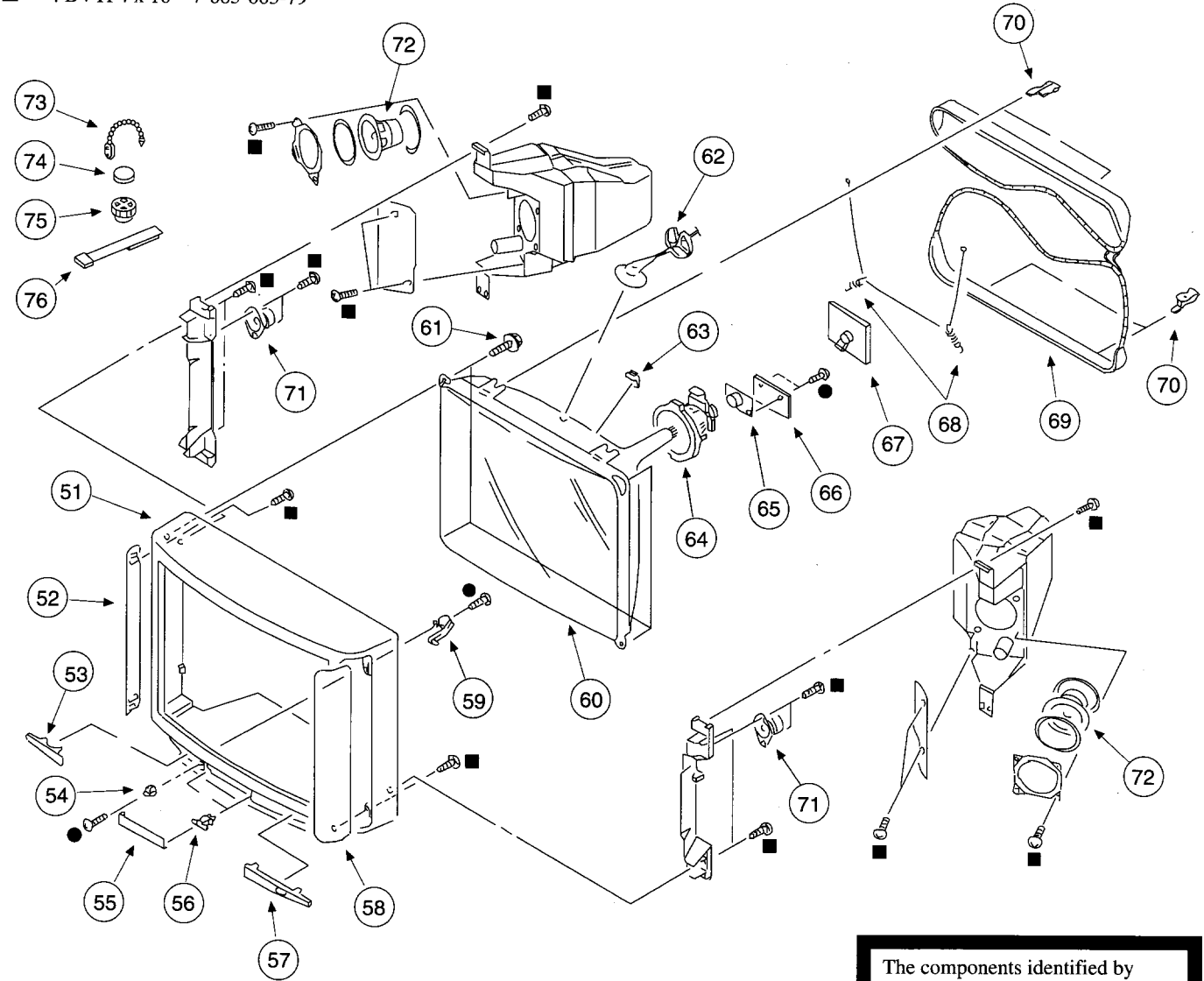
■ : BVTP4 x 16 7-685-663-79




6-2. PICTURE TUBE

● : BVTP3 x 12 7-685-648-79

■ : BVTP4 x 16 7-685-663-79



The components identified by shading and marked  are critical for safety. Replace only with the part number specified.